Pit and Quarry

SAND • GRAVEL • STONE

HANDLING • CRUSHING • SCREENING • WASHING

MAR 11 1919

III : 6

ADAMITE

Tires and Rolls

THE MANAGER of a large sand-mill wrote us:

"The results obtained from the "Adamite' Sand Crushing Rolls have been very gratifying They turned out 19,175 tons of sand without a dressing. We figure they will grind a total of about 77,000 tons; while the best we ever got from chilled iron rolls was 30,000 tons."

ARE YOU INTERESTED IN ROLLS THAT WILL GIVE YOU GREATER SERVICE?

We think you are. Write us!

PITTSBURGH IRON & STEEL FOUNDRIES CO.

Executive Offices, Pittsburgh, Pa. **Foundries, Midland, Pa.**

MARCH, 1919

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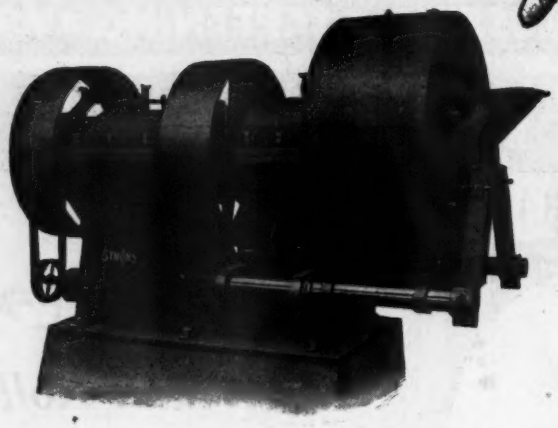
The Master Crusher



The Symons Disc Crusher

Will Increase Your Output—Lower Your Production Costs and Give You a More Uniform Material.

Superior to Rolls, Jaws or Gyratory for Crushing Gravel and Hard Heads

Records made by the Symons Disc Crusher in a large number of plants, big and little, throughout the country afford ample evidence of the superiority of this equipment. It is exceedingly low in operating and maintenance expense and high efficiency.

Here is an example of what one Symons' did: Size of crusher, 48 inches; material crushed, lime stone; length of time operated, 3 years; size of feed, 4 inches; size of product, 1¼ inches; horse power, 65; tons crushed per hour, 80 to 100; tons crushed per set of discs, 750,000. No time lost on account of breakage.

Let us send you Booklet R describing this crusher in detail.

CHALMERS & WILLIAMS

1430 Arnold St. **Chicago Heights, Ill.**

Pit and Quarry

Vol. 3 Chicago, Ill., March, 1919 No. 6

NATIONAL AGGREGATE & BALLAST CO.
FOUR CARS READY TO GO TO, CLAY CENTER! WHAT WILL THE RATE BE?
B.Z. & C. RY
HOW DO I KNOW? HAVENT HEARD FROM WASHINGTON THIS MORNING!
BEN MERRELL

What Are the Rates Today?

OUR cartoonist has succeeded in depicting in a wonderfully forceful manner the dilemma of the pit and quarry operator at the present time. He has exaggerated, to be sure, as all cartoonists do; but that serves only to drive the lesson home more forcibly.

But there are some cheering things to consider in connection with the rate situation. The delegates to the Buffalo convention were assured by the representative of the Railroad Administration that so far as he was aware there was no intention of making a change in rates on pit and quarry products during the present year. The word has gone out, too, that the proposed new rates in the central territory have been withdrawn—probably as a result of the strong presentation before the committee in Chicago, as reported in the February issue of PIT AND QUARRY.

But the fact remains that rates are still too high; and while any stable rate is better than an uncertainty or a fear of change, it would seem that the Buffalo convention did the sensible thing in demanding a return to the tariffs of 1914 as a starting point for revision.

Where Do We Stand?

An Analysis of Present Conditions, Presented Before the Convention of the Indiana Sand and Gravel Producers' Association

BY E. GUY SUTTON

Secretary, National Association of Sand and Gravel Producers

IT has been truly stated that we learn wisdom in three ways: (1) By imitation—the easiest way; (2) by experience—the most difficult way; (3) by thinking—the noblest way. In the course of his growth from childhood to maturity man passes through these three stages of mental development, affected, of course, by hereditary tendencies. As is the case with individuals, so it is with nations—all must seemingly endure and profit by these various steps of progression, modified by racial characteristics. The same principles likewise apply to the development of an industry, influenced, to continue the comparison, by the craft of which it formerly may have been a part or from which it sprang.

Thus it may be said that the production of sand and gravel, as a commercial proposition, in its early history followed the methods already established in connection with the manufacture of crushed stone, at least so far as the reduction of oversize and screening, or gradation, was concerned. This was the period of imitation. Then followed the years of experience, combining failure and success in varying proportions, but with the final result that a few first principles governing the establishment and development of a sand and gravel plant have been clearly demonstrated:

1. The deposit must be of proper quality, extent and gradation to meet the demands, and without excessive overburden of the market. It should be free from clay and other objectionable matter which cannot be carried off in solution.

2. One or two large markets should be available, in addition to small ones, to insure a fairly constant outlet for the various grades of material produced.

3. The prospective producer should be assured that the transportation companies on which he must depend for the delivery of his material will exhibit a favorable attitude and maintain reasonable and competitive freight rates and will provide adequate equipment to handle the shipments offered.

4. An abundant water supply should be easily obtainable, with suitable provision for the disposition of waste.

5. Labor of a good class and at reasonable wages should be available from sources accessible to the plant.

6. It should be possible to secure fuel, repairs and supplies from markets close enough to the plant to avoid interruption to operations.

7. The plant itself must be constructed and adapted, as to equipment and capacity, to the nature of the deposit from which the raw material is supplied as well as to the local market conditions.

If the gravel and sand producers who are engaged in the industry today had given closer attention to the foregoing points before locating and erecting their plants, they might have attained greater financial success. If the firms who contemplate embarking in the business will make investigations along the lines suggested and

will not listen altogether to machinery salesmen—to whom we give full credit in their proper sphere—they may decide to employ their capital and energy in other directions, for it will become apparent that the location of a sand and gravel plant is not as simple as it seems.

INDUSTRY SHOULD "TAKE THOUGHT."

Having reached these definite, though axiomatic, conclusions, we may assume that the sand and gravel industry has passed through its formative period and in accordance with our original maxim, having profited by imitation, experience and experimentation, is now ready, with the establishment of peace, to proceed by "taking thought."

While our business was greatly curtailed during the war, yet we had to endure much less hardship than most industries which, like ours, could not be adapted to the production of materials used directly for war purposes. Moreover, what we have lost through the necessary restrictions placed upon construction work will now be our gain. It seems likely that we will experience a long season of general building activity. Even if private construction should not be resumed at once, that very fact will tend to increase rather than decrease the promotion and execution of public improvement work.

In the first place the prospects of an unprecedented amount of road work being done is very encouraging. Because of deferred new work and improper maintenance on account of war conditions, together with the abnormal demand for hard surfaced roadways, due to the advent of the automobile and truck, we are now probably ten years behind with highway construction as compared with normal development. This assumption is justified, if not actually substantiated, by the fact that every state in the Union

E. Guy Sutton

is preparing a well-defined and extensive road building program. Moreover, the Federal Government, judging from statements and recommendations made by the higher officials, will provide millions in addition to appropriations already available for the building of Federal Aid Roads, with the double purpose in view of (1) establishing a much needed system of transcontinental highways, and (2) providing for the distribution and employment of the demobilized troops with the least disturbance to labor and industry. Furthermore, the federal authorities, including the president and his cabinet officers, have finally awakened to the insistent call for better roads and have come to realize that it is a question that is of vital interest and importance to every citizen, since the development of highways enhances the value of property; makes better mail service possible; lowers the cost of farm transportation, and brings the food consumer in direct communica-

tion with the food producer, while at the same time providing a means for supplementing the inadequate railroad service now accorded to both passenger and freight traffic.

On account of the scarcity of labor, together with the shortage of cars and motive power, the railroads have done comparatively little improvement and maintenance work while they have been under government direction, though the excessive traffic has placed the roads in bad condition. Much needed construction and repair work was not undertaken before the war and during private control because of insufficient funds. It can safely be assumed, therefore, that with federal appropriations available and with the release of labor and equipment from war activities, there will be a heavy demand for ballast and concrete aggregates from the railroads.

The Doorway to Prosperity.

With these favorable prospects in view, may we not say that we stand at the doorway of prosperity? If so, are we prepared to enter?

In my opinion, that depends upon how well we are equipped as an industry to look after our own interests while giving assistance in the solution of the issues of the day. Of all the nations engaged in the war, America was the most fortunate. There was no destruction within our borders; we suffered the least loss of life and waste of money in comparison with our population and wealth; with our industries intact and our finances not seriously impaired, favored with natural resources that are practically inexhaustible, we stand ready to replenish the world's losses and to find new markets for our manufactured products. What must be a period of reconstruction for other peoples, is for us a period of readjustment. But in our optimism let us not be unwisely complacent and contented. Emergency acts which were sanctioned, and justly so, because of the exigencies of the war, have defined policies and established conditions and precedents which will likely cause confusion for some time to come. In fact, it is the unforseen and the unforetold that give us the greatest concern and it is these problems of uncertainty that especially we must be prepared to meet as they are presented.

Two Imminent Questions.

Two of the most imminent questions with which we are confronted are (1) transportation and (2) labor.

In face of the fact that men who have studied the transportation problem for years can not agree as to what the future status of the railroads should be, it would be presumptious on my part to attempt to suggest what disposition should be made of them. The indecision with reference to the matter probably affects us as seriously as will the final settlement of the question, whether it be in favor of government or private ownership or a combination of the two. For until we know with whom we must deal, we will be at a disadvantage in handling the problems of readjustment, so far as railroad shipping is concerned. If the government retains control over the railroads for the prescribed twenty-one months after peace is declared, we can not expect any radical or permanent reforms or readjustments to be effected within that time. In case Congress sees fit to provide for government supervision for a longer period, then new legislation must be passed, which will no doubt completely change the present system. If the railroads are turned back to the owners, then the old practices of private control must be re-established, modified perhaps by new and untried legislation, which will cause further complications. So I contend that the traffic problem, with its factors of uncer-

tainty and which for us involves the important question of freight rates and car supply, commands our studied consideration and attention.

Labor the Big Problem.

The labor problem in my opinion is the greatest issue presented to the industrial world for solution today. It is not local or national in its character, but international. It is not a political, but a social, problem. The laborers of the allied countries participating in the war have had an important part in bringing the conflict to a successful conclusion, not only as fighters, but as workers furnishing the materials of war. They feel, and justly so, that they are entitled to some of the fruits of peace. In the countries which met defeat, dissatisfaction arises because of unfulfilled promises whereby the laborer hoped to be relieved from taxation and the other burdens of state had victory been won. During the period of the war, high wages have prevailed; a return to a normal wage scale, even with a proportionate reduction in living expenses, will be met with organized contention. In order to prevent labor troubles, with its dire effects upon the prosecution of the war, concessions were made as emergency measures which are now demanded to be made permanent. Captains of industry, recognizing the labor situation as a serious proposition, are preparing to handle it in a fair and intelligent manner, regardless of preconceived notions and in the light of the new order of things which the war has brought about. Fortunately, the sand and gravel producer does not employ a great many men, but he secures his fuel and supplies from concerns who do employ skilled and special laborers in great numbers, and thus he is indirectly affected by the general labor conditions and therefore must be prepared to take an active part in helping to dissipate the feeling of unrest which is rife in the world at the present time.

While these two questions—those relating to transportation and to labor—are of vital concern to all branches of industry, yet there are others which we might term special problems of our own.

Uniform Practices Needed.

In the first place, because of the natural adaptability of sand and gravel to a variety of uses, we have allowed our business to grow up without any special attention. We have no established practices with reference to either the production or disposition of our output. Our cost data are not capable of comparison because we have no uniformity in cost accounting, so that it cannot be determined whether one method of operation under given conditions is better than another. We have no better reason for turning out a great variety of sizes and mixtures than that the trade demands it. We sell material for gravel roads that are built in the same manner that they were fifty years ago, though the change in traffic conditions requires a higher class and different type of construction even for the roads that are not main routes. We have no regular means for disseminating knowledge with reference to our industry, either to the producers or to the users. Prices have been set by the buyer in most cases, instead of by the seller, regardless of the cost of production.

Does it not, therefore, appear that it is high time that we equip ourselves with facilities and finances sufficient to provide for the development of our industry along progressive and constructive lines? The questions which I have mentioned are of interest to every producer in the United States and for this reason they should be handled as a national proposition.

Men of all professions and callings, with the approach of peace, in trying

to fathom the meaning of the war, are inclined to forget the evil effects and to apply the good it has wrought to their own particular line of work or thought. The minister sees a new era in religion; the physician predicts a revolution in the practice of medicine and surgery; the farmer appreciates more than ever his exalted place in the sun and will profit by his experience in intensified tilling of the soil; the manufacturer will apply the new methods of economy which he has learned by enforced measures of conservation; the laborer believes he has come into his own; the sociologist has had some of his theories exploded, but other illuminated; and thus we might go on through the whole category of human endeavor. But what is the great lesson which has been impressed upon the industrial or commercial world? In my opinion it is this: That good faith is better than bad faith, and that no industry can successfully endure unless there is a well defined spirit of co-operation existing among its members.

ENTITLED TO SUCCESS.

In conclusion, permit me to repeat that we stand facing an important and critical stage in the development of our industry, but by "taking thought" I am confident we may attain the degree of success to which we are justly entitled, following the sacrifices which we have willingly endured while the evil spirit of the Hun was being swept from the world for all time. In my opinion, this preparedness of which I speak consists in the proper organization of district, state and nation in one correlated body of sand and gravel producers, so that there may be a free exchange of ideas and a development of healthy business fellowship and helpfulness; an organization fully armed and equipped to meet the conditions of uncertainty which will confront us during the period of readjustment and which eventually will be the means through which we may take our rightful place among the producers of building materials, whose products will go to add to the permanent wealth of our country, which has been so seriously impaired by the ravages of war.

Importation of Sand a Price Factor

Brought Here as Ballast in Troop Ships, But Is Sold in New York to Bring Down Rates.

ORDINARY building sand, brought to this country in great quantities since the close of the war as ballast in troop ships, was used recently in New York to break the sand prices that have been held at practically Government war prices, according to The Dow Service Daily Building Reports.

During the war the Government fixed a price in the neighborhood of $2.25 delivered, representing a wholesale price of approximately $1.25 a cubic yard.

"The wholesale price was maintained entirely according to the supply here in the market prior to the movement of troops back to home ports," says Allen F. Beals of the Dow Service, "and as long as the supply here was controlled there was nothing for the contractor to do but to meet the price. In the meantime the sand from Belgium and France continued to be dumped upon piers and storage docks here, and such a quantity piled up that it became a menace. The contractors expected after the war that there would be an automatic drop back to proportionately pre-war levels, recalling that the normal price for ordinary building sand in

this market before the war was 50 cents a yard.

"No change occurred, and in the meantime the George A. Fuller Company and other great contracting concerns were invited to figure important building operations and when they came down to the sand figure found that there was no promise of an early return to prices. The next step was to force this commodity lower on delivery price in this market, and a new materials delivery company was organized and announced a price for delivery sand of $1.85 or 40 cents below the former delivered market price of $2.25 a yard; 50 cents off the former gravel price of $3.25 a yard delivered in Manhattan, making the present quotation $2.75, and $3.00 for delivery in the Bronx.

"At the same time the price of broken stone in New York dropped about 25 cents a yard on delivered price, making the quotation $3.00 for 1½ and ¾-inch sizes for Manhattan delivery and $3.25 delivered in the Bronx. Simultaneously with the drop in price the ballast sand and gravel piles diminished at the various local unloading docks."

New Use for Lime.

THE Chemical Bureau of the Lime Association has brought to light what promises to be a new application for lime, viz.: The manufacture of sand-lime roofing tile.

A manufacturer states that he is of the belief that sand-tile for roofing purposes can be made with lime as a binder, and that the product can be produced very reasonably.

Sand-lime roofing tile made by this man has passed through two winters on the roof of his building, and shows no signs of deterioration.

PLEASE continue to send us PIT AND QUARRY. It looks all right to us.—Pacific Rock & Gravel Co., Los Angeles, Calif.

Back From the Front

Member of Our Staff, Target for Hun Machine Guns, Is in "Civvies" Again.

IF you have ever been in our office you have met him—unless it was in the past several months, while he has been over in France helping to make the world s. for d.

He is George Hemler, the man on the PIT AND QUARRY staff who can do more things than any other—and do

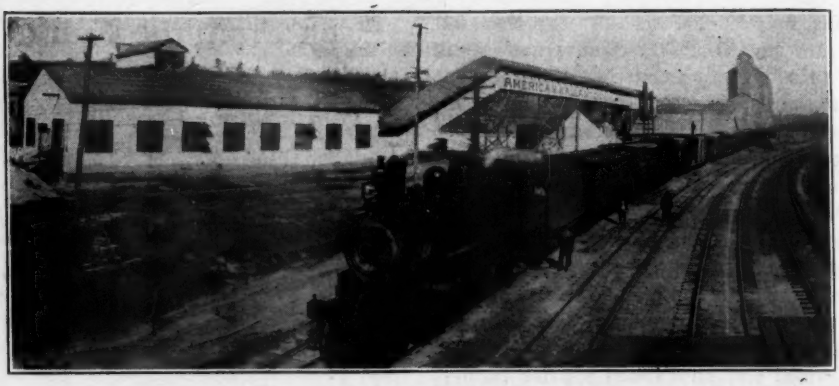
George Hemler

them well—from getting advertising to making the ghost walk on Saturday.

You'll see him again, too; for he is back, thanks be! and at his accustomed desk, just as though nothing had happened.

He is in "civvies" again, but you will recognize him if he should drop in to see you.

Hemler was in foreign service five months, with Company F, Thirty-ninth Infantry. He saw service on the Verdun front, where the real fighting was going on, among his other experiences being a period of four hours under the fire of German machine guns.



Limestone Plant of American Ballast Company

Zinc Mine Refuse Made Marketable

Two Plants of American Ballast Company Working Up This Material at Mascot, Tennessee.

THE American Ballast Company has two plants of considerable size located at Mascot, Tenn. This town is about fourteen miles east of Knoxville, where the main office of the company is located.

One of these plants produces limestone, largely for agricultural purposes, its capacity of stone for this use amounting to 800 to 1,000 tons per day. In addition to this, a large amount of limestone dust is shipped to be used in asphalt work.

This plant was visited not long ago by members of the National Agricultural Limestone Association, in connection with the research and development work of the association, and the product of the plant was described as of a very high quality.

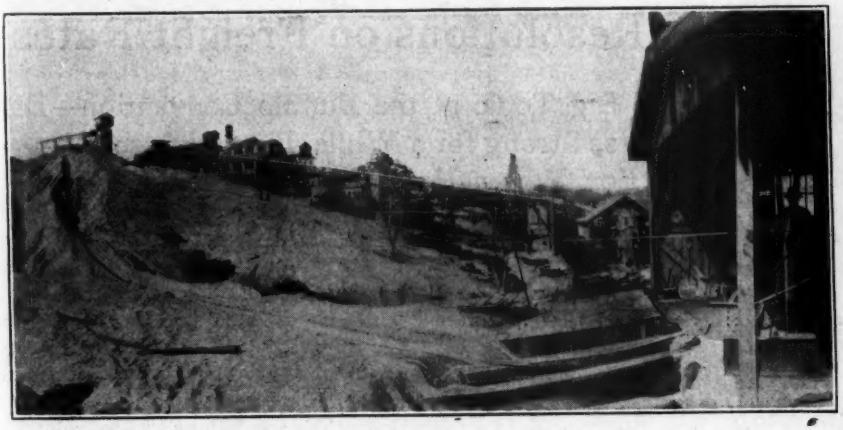
The visitors also reported that the company operates a farm in connection with the plant, where experimental work can be carried on in the reclamation of land. Alfalfa was found growing luxuriantly and the farm was well stocked with native steers. The object lesson by comparison was there, too; for in the distance were unproductive lands which could be made equally fertile by the use of lime.

The limestone used by this company is first mined and milled by the American Zinc Company for its zinc content, so that no crushing equipment is necessary except two tube mills which are used in reducing the coarser material to dust. The American Zinc Company produces from 2,000 to 3,000 tons of limestone per day, running from ½-inch down to dust, a large part of it being less than 10-mesh size.

The wet concentration method of separation is used, so that the American Ballast Company has installed a dehydrating and drying system through which the stone must go before it is ready for the market.

The material is carried from the zinc mill by flume, and emptied into a Dorr thickener, from which it is taken to filter presses and thence by belt conveyor to three rotary driers, and again on belt conveyors to concrete bins.

From the bins it is taken to, the Bates valve bag packer, if it is to



Plant Where Chats Are Prepared for Market

go out in bags, or to the bulk loading machine if it is to be loaded in bulk. This loading machine consists of a screw conveyor working inside of a 12-inch pipe, which is mounted on a truck so that it can be run into the car, and is operated by a small motor.

The plant where ballast and commercial chat are produced is about a quarter mile away. Loading at this point is done by flume from the mill and by drag-line from the pile.

Short Cut to Costs.

AN approximate idea of the total cost of running a plant can be reached in a very simple way. Just multiply the total pay-roll by two, and you will have as close an approximate figure as can be arrived at without going into a mass of figures. This is, perhaps, not close enough for the person who is a crank on cost analysis, nor is it sufficiently accurate on which to make close prices for bidding; but it is a rough-and-ready means of estimating used by many operators when it is not possible to make a closer estimate.

PIT AND QUARRY fills a void long felt by the sand and gravel men.—Missouri River Sand & Gravel Co., Grayville, Ill.

Agricultural Lime Legislation.

THE laws of many states relating to agricultural lime, its analysis and the guaranty of manufacturers concerning it, are at variance with the specifications of the American Society for Testing Materials covering lime used for other purposes.

To secure a closer harmony in this respect among the several states, and to inject into such laws a more reasonable attitude toward the manufacturers, the Lime Association has begun a compilation of all such laws now on the statute books.

Through the proper channels the matter will be brought to the attention of the legislatures, and a combined effort made to right certain existing wrongs.

The Southern Lime and Stone Company, Johnstown, Pa., has been organized to quarry and mine for all kinds of stone, etc., with a capital of $100,000. The incorporators are William Hukel and W. H. Swishue, Johnstown, Pa., and J. R. Rockel, Altoona, Pa.

The Washed Sand & Gravel Company of Canton, Ohio, has incorporated with a capital of $125,000. The principal incorporator is C. L. Lothamer.

Strong Resolutions on Freight Rates

This Was the Big Topic at the Buffalo Convention—Discussion Was Strong for a While, But the Association Was a Unit on the Vote.

THE feasibility of the peace league idea has been conclusively demonstrated. It has been shown to be workable, even where differences of opinion exist.

The men who have demonstrated this fact are the men who gathered in Buffalo, February 11 and 12, to attend the convention of the National Crushed Stone Association.

The topic which, of course, aroused the most strenuous debate was that of freight rates. The delegates agreed on the one fact that rates are not right; but from this point they diverged in a great many directions, demanding various remedies according to the particular local restrictions under which they happened to be working.

After considerable debate it was recognized, however, that in order to accomplish anything, the Association would necessarily have to act as a unit and focus its demands, rather than shooting a scattering and inconsequential fire at the Railroad Administration. But the discussion was of benefit as showing the temper of the convention and giving the traffic committee something on which to base its report, and which the convention could adopt as an expression of its united demand. The result was the series of resolutions shown on the opposite page, which were unanimously adopted at the opening of the second day's session of the convention.

They do not go as far in denunciation of the rate-making bodies as some of the men present might have desired, nor do they deal with local inequalities and some other things which a few men wanted to get into the report in an attempt to rectify conditions in their own particular fields. But it is a significant fact that the resolutions were adopted unanimously without debate, showing that the strenuous discussion of the previous day had cleared the atmosphere and brought each one into a state of mind to abide by the best judgment of the traffic committee.

Following the adoption of the resolutions a representative of the Railroad Administration was introduced and spoke on the rate situation at some length. He assured the convention, so far as any assurance regarding rate-making was possible, that it is not the intention of the Railroad Administration to put into effect the mileage rate this year nor to make any other changes in the rates on sand, gravel and stone.

He gave no hope, either, that rates would be reduced, preferring to emphasize the deficit which the railroads showed for last year and inquiring who was to assume the increased deficit if rates on these or any other commodities were reduced.

He aroused considerable enthusiasm on the part of the men present by stating that the Railroad Administration authorized an expenditure for 1918 of $10,000,000 for ballasting, of which $4,500,000 was spent. The remainder is still available, together with an additional appropriation of $6,000,000 authorized for 1919, making

Resolutions Passed by Stone Men.

WHEREAS: The development and growth of the crushed stone industry, in large part, was the result of encouragement by railroads to procure ballast;

WHEREAS: Such plants were located with reference to certain markets and under certain freight rates which rendered their operation successful at the time of construction; and

WHEREAS: These various plants were located with reference to certain competitive conditions with respect to the matter of freight rates, and present locations now constitute a vested right, which should not be destroyed or disturbed; and

WHEREAS: There is now a great demand for road building; and

WHEREAS: The present excessive rates are, in many instances, equal to or greater than the actual cost of producing stone, which will cause a great reduction in amount of building and public improvement, with the alternative of the installation of small crushing plants along the various highways to be improved, and which, once established, will in many instances permanently remain, thereby, for a long time or forever, destroying the market heretofore available to the present installed plants; and

WHEREAS: The further consequence of the loss of this commercial business, not only by the loss of the freight rate to market, but thereby increasing, by approximately fifty per cent, the cost of the remaining production, which is ballast, will thereby result in serious injury to the railroad, both from the standpoint of maintenance and traffic destruction, to the investment of the stone producers, and ultimate increased cost of road material to the public; Therefore,

1st. BE IT RESOLVED: That the tariffs applying on crushed stone shipments in effect in 1914 be used as a basis for a reduction on the freight rates from the present excessive and exorbitant rates on this commodity, and that increased rates, if any, over those in effect in 1914, be imposed so as not to disturb the relative situation as far as shippers are concerned, and not to destroy the vested rights of capital invested under conditions existing in and prior to 1914; and

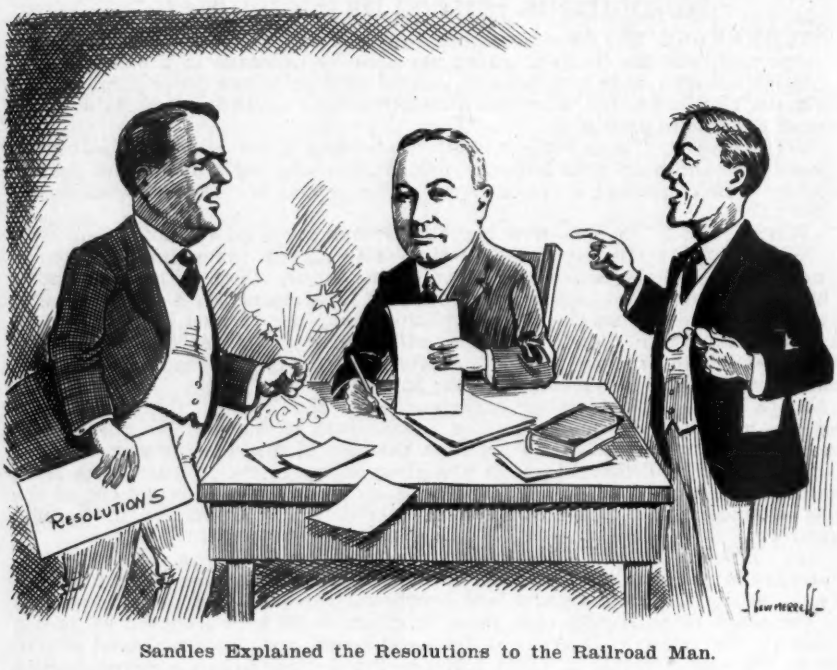
2nd. BE IT RESOLVED: That early action be taken by the Railroad Administration to reduce the present excessive rates, so as to enable highway engineers and architects to make intelligent and accurate estimates on public and private improvements and construction, and to give assurance to bidding contractors that they will not have to meet added and ruinous freight charges as were imposed upon them during the war period; and

3rd. BE IT RESOLVED: That since the present excessive freight rates were imposed upon road and building materials as purely a war emergency measure, and the men engaged in the crushed stone industry, in order to assist in winning the war, submitted to and acquiesced in said rates for the war period, now plead for a reduction of these war freight rates to a basis that will permit, not halt, the return and revival of the building and construction activities of the nation; and

4th. BE IT RESOLVED: That the National Crushed Stone Association approve the protests and recommendations made by state legislatures, civic organizations and public officials against excessive freight rates on highway building material, and we urge all members of this Association to have their own state legislatures to take similar action; and

5th. BE IT RESOLVED: That we commend the efforts of the United States Department of Labor in its activities to promote a great program of highway and building improvements so as to act as a shock absorber of idle labor and to employ the thousands of returning soldiers, thereby helping to preserve the peace, prosperity and contentment of this nation; and

6th. BE IT RESOLVED: That we believe that the present excessive freight rates, made as a war measure, if continued, will prevent public officials from going forward with public improvements, thereby halting and handicapping revival of industrial activities, and increasing the army of the unemployed and giving encouragement to the red flag propaganda, and lessen the revenues of railroads, increasing the cost of railroad ballast, and in general, tend to imperil the welfare of this nation.



Sandles Explained the Resolutions to the Railroad Man.

a total of $11,500,000 available for the present year.

Mr. Wright, the railroad man, was not present when the resolutions were read, so that at the close of his remarks, Mr. Sandles reread the resolutions for Mr. Wright's benefit. Mr. Sandles then undertook to discuss with Mr. Wright some of the contended points regarding railway rates, stating the contentions of the producers in one of the clearest, most forecful, and most argumentative statements of the entire convention. It developed, in fact, into a joint debate between Sandles and Wright. The latter proved himself a good diplomat and a good-natured antagonist, using many ways to sugar-coat his main argument—which was that the railroads needed the money. President Blair maintained a judicial attitude throughout the encounter and did not allow questioners from the floor to too seriously embarrass the railroad representative.

The special committee on freight rates was selected with great care as representing every part of the country and every interest, and was made up as follows:

John Rice, chairman, Easton, Pa.; A. F. Eggleston, Meriden, Conn.; R. N. Wallace, Bayport, Mich.; R. B. Tyler, Louisville, Ky.; E. J. Krause, St. Louis, Mo.; Edw. Heley, Cape Girardeau, Mo.; F. W. Schmidt, Morristown, N. J.; C. M. Hunter, Virginia; Chas. Laurey, Ontario; Fred Ellis, Peabody, Mass.; I. S. Truker, New Haven, Conn.; F. T. Gucker, Philadelphia; W. L. Sporborg, Syracuse, N. Y.; L. H. Hawblitz, Toledo, Ohio; E. T. Paul, Lewisburg, Ohio; Robin Boyle, Ontario; A. J. Sullivan, Chicago; A. J. Blair, Milwaukee; A. L. Norton, Albany, N. Y.

The subject of freight rates was, as

already suggested, the big topic of the convention, and the adoption of the resolutions was the culminating point of the two-days' conference; but there were other points which were highly important. One of them which did not receive the attention it deserved, because action on it was taken just before the close of the convention, was a vote to appoint a committee on standardization to act with similar committees from the American Society of Civil Engineers, American Railway Engineering Association, American Society for Testing Materials, and other organizations interested in the standardization of sizes of crushed stone.

Another line of action which will result in great good to the industry was the adoption of amendments to the constitution recommended by the executive committee. One amendment provides for the equalization of power among the organization members and individual members, the former being allowed five votes and the individual members one vote each.

The dues were established on a tonnage basis, at a figure not to exceed one mill per ton, this being on all products of the members without exception, including fluxing stone and railroad ballast, which heretofore had been excepted.

Another amendment provided for two directors to be chosen by each district association, and any number up to seven from the members at large. It was also provided that representatives from three districts shall constitute a quorum of the executive committee, instead of from five, as heretofore.

The amendments, which were adopted at the opening session of the first day, forestalled some of the discussions which were scheduled to take place later, so that some of them were omitted altogether while others were gone through in a brief and perfunctory way. It was not worth while, for instance, to discuss whether dues should be made on a tonnage or flat-rate basis after the convention had adopted an amendment to the constitution providing for the tonnage basis of dues.

The Association showed that it is taking a vital interest in the general business affairs of the country by voting unanimously to take membership in the United States Chamber of Commerce. Andrew H. Phelps, representing the National Chamber, was one of the principal speakers at the banquet on the first evening and also spoke briefly at one of the day sessions.

One of the interesting discussions was on the possible marketing of screenings, led by E. C. Dunbar of Detroit. In this discussion, attention was called to the fact that concrete made from screenings is stronger than concrete made similarly from sand, while it is often possible to sell crusher screenings at a lower price than the market price of sand. The possibilities in the marketing of limestone for agricultural purposes was also emphasized.

The following officers were elected for the ensuing year:

President—A. J. Blair, Lakeshore Stone Co., Milwaukee, Wis.

First Vice-President—John Rice, General Crushed Stone Co., Easton, Pa.

Second Vice-President—B. D. Pierce, Jr., Connecticut Quarries Co., New Haven, Conn.

Secretary—A. P. Sandles, Columbus, Ohio.

In being again chosen secretary, Mr. Sandles was given a substantial increase of salary in recognition of the excellent work which he has done for the Association.

The executive committee decided to hold the next convention at Louisville, Kentucky.

Convention Notes.

President Blair proved to be a calm, even-tempered moderator and a good all-around presiding officer. That's why he was re-elected.

A. A. Hall, of Piqua, Ohio, expressed the general sentiment of many members of the convention when he said that he would like to see a traffic manager in each general division of the association. It will probably come to that, too.

When a word of direction and inspiration was needed, Secretary Sandles was right on the job. He can think of more ways to express himself than a vaudeville artist; and a fine thing about his expressions is that they always get right to the point in the shortest possible time. Speaking of dues, he says the best way to get a reduction of dues is to get in some more members to help share the expense.

One of the inducements which took the convention to Louisville was R. B. Tyler's promise that the middle of the Ohio river is outside of the United States, or words to that effect. At least, that a place could be found where the dry amendment will not apply.

James Savage, wheel horse of the local committee, said that the reason no photograph was taken of the banquet was because the photographer could not secure any gas bags. That must have been an unusually pessimistic photographer. He probably was never around when a bunch of stone men got together.

M. S. Kincaid, Chicago representative of the Grasselli Powder Company, renewed acquaintances among old friends around the lobby of the Iroquois Hotel. Being a stone man himself, he was right at home with these people.

If the convention is ever held at the Iroquois Hotel again, a diagram of the room numbering scheme should be sent out to the members before they go to Buffalo. It would have avoided much embarrassment on the part of one of the delegates to have known beforehand that room 465 was on the tenth floor.

Unfortunately the Buffalo papers did not give much space to the convention. Mayhap things might have been different if Claude Clark had given a little more attention to that young lady reporter.

"No, this is not the Stone Cutters' Union," one bell hop was indignantly told when he came up with a telegram. But the name seemed to stick, nevertheless, so far as some of the minor employes of the hotel were concerned.

L. H. Hawblitz, of Toledo, seemed to have a touching way with him which accomplished wonderful results. He should by all means be placed on the banquet committee for the Louisville convention.

Just as a matter of local pride, PIT AND QUARRY rejoices in the fact that Chicago has such a strong representative in the National Crushed Stone Association as Treasurer A. J. Sullivan. He was one of the resourceful, levelheaded men of the convention.

Registration of Delegates

H. B. Allen, General Crushed Stone Co., Philadelphia.
H. W. Allen, Keystone Lubricating Co., Buffalo.
Wm. A. Anderson, Aetna Explosives Co., Buffalo.
Major W. M. Aheson, Syracuse, N. Y.
B. R. Babcock, Callahan Rd. Improvement Co., Albany, N. Y.
Fred H. Becker, Becker Limestone Co., Lincoln Park, N. Y.
Leslie J. Bennett, Buffalo Cement Co., New York.
A. J. Blair, Lake Shore Stone Co., Milwaukee.
L. C. Bonnell, Commonwealth Quarry Co., Summit, N. J.
Robin Boyle, Provincial Stone & Supply Co., Toronto, Ont.
Thomas H. Bronson, County Highway Superintendent, Lockport, N. Y.
L. J. Boxley, W. W. Boxley & Co., Roanoke, Va.
George L. Buck, Mayor, Buffalo.
Clyde Calvin, Bessemer Limestone Co., Youngstown, Ohio.
James R. Callanan, Callanan Crushed Stone Co., Albany, N. Y.
Claude Clark, Columbus, Ohio.
H. K. Crefont, Olean, N. Y.
William Dahm, Belmont Gurnee Stone Co., North Bergen, N. J.
Will B. Davidson, Davidson Bros., Gouverneur, N. Y.
F. C. Douglas, Fetch & Douglas, Rochester, N. Y.
B. F. Damon, New York City.
F. C. Diebold, Buffalo Cement Co., Buffalo.
C. M. Doolittle, Canada Crushed Stone Corp., Dundas, Ont.
E. C. Dunbar, River Rouge Stone Co., River Rouge, Mich.
W. Scott Eames, New Haven Trap Rock Co., New Haven, Conn.
C. M. Edwards, Rochester, N. Y.
J. J. Egan, Imperial Belting Co., New York City.
Arthur F. Eggleston, John S. Lane & Son, Meriden, Conn.
Fred E. Ellis, Essex Trap Rock & Const. Co., Peabody, Mass.
G. W. Essery, Crushed Stone, Ltd., Toronto, Can.
Ascher B. Ewing, Buffalo.
J. L. Faylor, General Crushed Stone Co., Akron, N. Y.

W. E. Foote, Wickwire Limestone Co., Buffalo.
B. F. Fowler, Wentworth Quarries, Ltd., Vinemount, Ont.
E. P. Fanestel, Cold Springs Const. Co., Buffalo.
Julius I. Fresee, Lockport, N. Y.
Charles A. Freiberg, Buffalo Cement Co., Buffalo.
Louis W. Gay, Texas Co., Buffalo.
O. M. Graves, General Crushed Stone Co., Easton, Pa.
F. T. Gucker, The John T. Dyer Quarry Co., Philadelphia.
B. Haislip, U. S. Rubber Co., Chicago.
A. A. Hall, Ohio Marble Co. and Stone Products Co., Piqua, Ohio.
Robt. Hambleton, Hagersville Crushed Stone Co., Hagersville, Ont.
F. W. M. Hammerschmit, Elmhurst-Chicago Stone Co., Elmhurst, Ill.
E. S. Hanson, editor PIT AND QUARRY, Chicago.
J. S. Hardesty, Island Slag Co., Buffalo.
W. R. Harris, Island Slag Co., Buffalo.
Earl C. Harsh, Cleveland, Ohio.
J. B. Hart, Canada Crushed Stone Co., Dundas, Ont.
L. H. Hawblitz, France Stone Co., Toledo, Ohio.
H. W. Heller, Worthington Pump & Machinery Co., New York City.
Howard Havel, Buffalo.
J. L. Heinrich, LeRoy Lime & Crushed Stone Co., LeRoy, N. Y.
Edward Heley, Cape Girardeau, Mo.
H. H. Hodghin, Gouverneur Limestone Co., Gouverneur, N. Y.
A. J. Hooker, Buffalo Crushed Stone Co., Buffalo.
C. M. Hunter, W. W. Boxley & Co., Roanoke, Va.
H. Hyman, Empire Limestone Co., Buffalo.
M. S. Hiland, C. B. Whitmore Co., Lockport, N. Y.
T. A. Jackson, Keystone Lubricating Co., Pittsburgh.
P. James Kelly, Conn. Quarries Co., New Haven, Conn.
James Kessney, Buffalo.
E. J. Krause, Columbia Quarry Co., St. Louis, Mo.
H. C. Lane, John S. Lane & Son, Inc., Meriden, Conn.
V. E. Larsen, PIT AND QUARRY, Chicago.
Charles Lourey, Queenstown Quarry Co., St. David, Ont.
J. W. McCabe, Chicago Pneumatic Tool Co., Buffalo.
D. R. McKay, Imperial Belting Co., Chicago.
S. M. McKeown, Queenstown Quarry Co., Ltd., St. Davids, Ont.
Ralph E. McLean, East St. Louis Stone Co., East St. Louis, Ill.
L. J. McNitt, National Limestone Co., Naginery, Pa.
John J. McTuerney, Rochester, N. Y.
H. M. Martin, Barber Asphalt Paving Co., Buffalo.
Guy H. Miller, Bureau of Public Roads, Troy, N. Y.
H. H. Mitchell, General Crushed Stone Co., Easton, Pa.
J. A. Moore, Higgins Stone Co., Bellevue, Ohio.
C. A. Morris, American Lime & Stone Co., Tyrone, Pa.
J. W. Mowery, Imperial Belting Co., Detroit.
Prof. A. V. Muller, Lockport, N. Y.
A. L. Norton, Norton Stone & Lime Co., Albany, N. Y.
Sam Oliver, Oliver Rogers, Ltd., Owen Sound, Ont.
F. J. O'Mealia, LeRoy Lime & Crushed Stone Corp., LeRoy, N. Y.
Frances C. Owens, Grasselli Powder Co., Cleveland, Ohio.
E. T. Paul, Bluffton Lewisburg Stone Co., Lewisburg, Ohio.
Andrew S. Phelps, U. S. Chamber of Commerce, New York City.
B. D. Pierce, Jr., Conn. Quarries Co., New Haven, Conn.
Mr. Post, Lockport, N. Y.
John Rice, General Crushed Stone Co., Easton, Pa.
Willard D. Robinson, Toledo Stone & Glass Sand Co., Toledo, Ohio.
N. C. Rockwood, Rock Products, Chicago.
Frank Rogers, Oliver Rogers, Ltd., West Toronto, Ont.
W. R. Sandborn, Lehigh Stone Co., Kankakee, Ill.
A. P. Sandles, Columbus, Ohio.
Arthur S. Savage, Buffalo Crushed Stone Co., Buffalo.
James Savage, Buffalo Crushed Stone Co., Buffalo.
F. W. Schmidt, North Jersey Quarry Co., Morristown, N. J.
F. W. Schmidt, Jr., Norris County Crushed Stone Co., Morristown, N. J.
A. L. Scott, General Crushed Stone Co., LeRoy, N. Y.
George F. Shafer, General Crushed Stone Co., Rochester, N. Y.
A. L. Sheffer, National Limestone Co., Naginery, Pa.
William G. Shoemaker, Buffalo.
Gordon Smith, Bitoslag Paving Co., New York City.
D. C. Souder, France Stone Co., Toledo, Ohio.
W. L. Sporberg, Rock Cut Stone Co., Syracuse, N. Y.
Paul Stern, American Contractor, Buffalo.
J. P. H. Stewart, Provincial Stone Co., Toronto, Ont.
George H. Stein, Toledo Stone & Glass Sand Co., Toledo, Ohio.
A. J. Sullivan, U. S. Crushed Stone Co., Chicago.
F. M. Schwindinox, Wentworth Quarries, Ltd., Vinemount, Ont.
C. F. Tigges, Columbia Quarry Co., St. Louis, Mo.
I. S. Truker, Conn. Quarries Co., New Haven, Conn.
W. E. Tumson, Quinlan & Robertson, Ltd., Crookston, Ont.
R. B. Tyler, R. B. Tyler Stone Co., Louisville, Ky.
J. J. Urschell, Toledo, Ohio.
Robert N. Wallace, Wallace Stone Co., Bayport, Mich.
W. E. Webster, Buffalo.
W. C. West, J. M. Trenton Co., Syracuse, N. Y.
A. L. Werthen, Conn. Quarries Co., New Haven, Conn.
R. C. Whitmore, C. B. Whitmore, Ltd., Lockport, N. Y.
E. E. Whitmore, C. B. Whitmore, Ltd., Lockport, N. Y.
L. E. Whitlock, Aetna Explosives Co., Buffalo.
I. W. Wortman, North Jersey Quarry Co., Morristown, N. J.
H. S. Young, Buffalo Cement Co., Buffalo.

ASSOCIATION ACTIVITIES

Illinois Association Gets Business Director

Ben Stone, Experienced Traffic Man, Chosen for the Position at Peoria Meeting.

THE Illinois Sand & Gravel Producers Association has employed a business director to look after its interests.

The man who has been engaged for this position is Mr. Ben Stone, Springfield, Ill. Mr. Stone is a traffic specialist,

Ben Stone

having had nineteen years service with the Illinois Central Railroad. He is an organizer of experience and the members of the Illinois Association feel that they have placed their interests in competent hands.

Mr. Stone will begin his work March 15, and will have offices in the Illinois National Bank Building, Springfield, Ill.

This action was decided upon at a meeting in Peoria on February 18, at which 92 per cent of the member companies were represented.

Michigan Aids Roads

Raises Fund to Help Propaganda in Favor of Bond Issue

THE Michigan Sand and Gravel Producers' Association passed resolutions at a meeting in Saginaw February 21 pledging the earnest support of the members in the propaganda in connection with the Michigan proposed $50,000,000 bond issue for road building.

But the men present did more than that. They handed in subscriptions right then and there to show in a tangible way their interest in the matter.

O. O. Stone of Detroit explained the working of the law, clarifying the matter in the minds of some of the members, after which followed a general discussion. Then the hat was passed, so to speak, and the following subscriptions were secured:

United Fuel & Supply Co.	$150.00
Detroit-Greenville Gravel Co.	100.00
Kalamazoo-Greenville Gravel Co.	100.00
Huron Shore Gravel Co.	100.00
Marquette Gravel Co.	100.00
Hersey Gravel Co.	100.00
Ohio-Michigan Sand and Gravel Co.	75.00
Detroit-Oxford Gravel and Stone Co.	50.00
Genessee Gravel Co.	25.00
A. E. Sheltraw	25.00
Raymond W. Dull	25.00
J. W. Mowrey	25.00
Geo. H. Burwell	5.00
Total	$880.00

They Are Anxious to Start Something

Chicago Producers and Dealers Will Do All They Can to Get Construction Under Way.

BUILDING material men of Chicago are anxious that construction shall start. Representatives of lumber, lime, cement, sand, stone and brick, gave a luncheon for that particular purpose recently.

"We have 150,000 cubic yards of sand in our yards and we will sell it for the same price we obtained in 1917," said J. W. Alder, president of the American Sand and Gravel Company.. "We will produce 1,000,000 more this year and we will sell that at the same price. We want to encourage building. We are doing better than that offer now. In 1917 we received $2.75; we are now offering the same sand at $2.50 and we are selling a little at $2.35. Sand has not jumped from $1.35 to $2.50 in the last year."

Each representative present had figures from his books showing the part that labor plays in producing materials. Nearly every one offered to open their books to any reputable person to verify his statements. They asserted vigorously and repeatedly that the increased cost of building materials is more than justified by the advance in wages and freight rates. One material will serve as illustrative—cement.

B. F. Affleck, president of the Universal Portland Cement Company, predicted that if the government were to fix the price it would be 20 to 30 cents higher per barrel than now asked.

"I notice a builder says that the price in the last year has jumped from $1.35 to $2.25," he stated. "The facts are the price now is $2.25, last year $2.11, and the year before $1.86.

"The price in Chicago today is the lowest base price in the country, with the exception of two or three very small centers. During the first half of 1918 we shipped from the Chicago plant a little less than 2,000,000 barrels at a cost of $796,000. That was an average freight cost of 37 cents per barrel. The last half of the year we shipped 2,087,000 barrels at a cost of $1,190,000, or a freight charge per barrel of 57 cents. The increase in freight cost was 19 cents, or 51 per cent.

"The increases in cost of prdouction in 1918 over 1915 are approximately as follows: Raw material, 20 per cent; fuel, 115 per cent; labor, 127 per cent; mill overhead, 110 per cent; general expense, 49 per cent; packing and loading, 167 per cent, and care of empty sacks, 62 per cent. Common labor in 1915 cost 19.5 cents per hour, in 1916 27.5 cents, in 1917 33 cents, and in 1918 42 cents. That is an increase of 115 per cent. Take now what we call turn men. In 1916 they received $2.30 a day, $3.20 in 1916, $3.85 in 1917, and $5.67 in 1918. That is an increase of 146 per cent."

H. A. Smith, secretary of the National Federation of Construction Industries, said he had been attempting for four weeks in Chicago to ascertain if the material men are asking excessive prices.

"I had hoped to unearth something," he said. "I have found instead that they are all losing money.

"But on the larger question let me say that building must go on. Building is the largest industry in the country except agriculture, and the building industry has suffered more by the war than any other.

"The government should encourage building. It should provide public works. That is necessary as a peace measure, and I hope Washington will soon see it."

The French China Company of Sebring, Ohio, has recently installed four Sunbury Automatic Unloaders to unload coal at the factories at Sebring.

Lime Makers to Compile Tonnage Figures

Desire to Have Report of Amount and Kind of Lime Shipped into Each State.

THERE is at present no information available showing how much and what kind of lime is being shipped into the several states.

Without this information, says Robt. F. Hall, general manager of the Lime Association, it is impossible to check the work of the Association in either of the two main purposes for which it was formed, viz.:

Intensive work where it is most needed, and progress in the increased demand for the product.

The executive committee has decided, therefore, to suggest to member companies the advisability of submitting to the Association monthly reports showing the total tons of each kind of lime shipped into each state.

"It is desired to compile these figures from month to month and to send them to all member companies so that the industry may be informed currently of its progress as a whole," says Mr. Hall. "If members knew, for instance, that the shipments of agricultural lime in any section of the country showed this year a marked decrease as compared with similar shipments last year, it would be possible to check the decline by concentrated effort in that particular region. The same is true of chemical and construction lime. Again, it is only by comparing the total tonnage of the country with the corresponding period of last year, that a fair decision can be reached regarding the value of the Association and the work it is doing.

"If members agree that it is advisable to begin this compilation, the Association will prepare the necessary simple forms to assist them in furnishing the figures. The results will be returned to all members in terms of monthly shipments of each kind of lime into every state in the Union. None of the details of this information will appear on this report, so that the shipments of no member can be learned from it. But all construction lime shipped into any one state in any one month by all members will show simply in one figure, representing that total. And so on through all the states for all three kinds of lime.

"This information will be of great value to the industry as a whole, and to individual members; and for the Association itself it will create the basis of all the work done in the interests of greater tonnages where they are most needed.

"The demand for agricultural lime throughout the country is recognized as imperative by all of the agricultural authorities, from the U. S. Department of Agriculture down to the farmers themselves. The Association proposes to compile figures showing exactly what this annual demand is in tons in each state. This will be done by securing from the State Experiment Station in each state, the acreage of acid land and the amount of lime required through a proper system of crop rotation, to correct this acidity. With these figures before us we shall be unable to tell what percentage of this demand is being supplied by the lime industry unless we know how much agricultural lime is being shipped into each state, and such a tonnage report as is suggested above will point out just what spots in the country are weak in this respect and just how weak they are, and will give the Association a definite idea of the possibilities for agricultural lime in each section. In other

words, we shall be directing our efforts scientifically and exactly instead of more or less at random, as must now of necessity be the case.

"Of course, all such reports submitted to the Association will be used only for the purposes described, and will be carefully kept in the general offices and treated as strictly confidential."

Will Stimulate Sale of Lump Lime

Association Sending Out Questionnaire from Which Valuable Data Will Be Compiled.

A QUESTIONNAIRE on the use of lump lime is being sent out by the Lime Association from the Washington office.

Norman G. Hough, director of the Construction Bureau, has charge of securing this data.

The questionnaire sent out to manufacturers includes the following questions:

1. Do you believe the greatest possibility for increasing lump lime sales in building construction lies in regaining tonnage that has been lost in the plastering field and that we should make this one of our principal drives?

2. One of the principal arguments we have for lime plaster is its ability to deaden sound and to improve acoustics in buildings where such conditions are essential. This argument is based upon good sound reasoning and also upon the belief of many architects who have used lime plaster, but we have no information that permits us to know to what extent it is a sound-deadening material. Do you consider this subject of sufficient importance to warrant an investigation to give accurate comparable data?

3. Are you in favor of our starting at an early date an extensive investigation to determine the cost per square yard of lime plaster placed on the wall? An investigation of this kind naturally covers such factors as sand-carrying capacity, smooth working material, spreading qualities, time required to complete the work, original cost of material, final cost, etc.

4. Do you feel it is important to prepare a standard specification for properly slaking lump lime?

5. Do you know of any properties, aside from plasticity, sand-carrying capacity, strength and pitting, that will be affected through improper slaking of lump lime? If so, please mention them so they may be given consideration in framing plaster specifications.

6. But little accurate information is now available on the rate at which lime plaster dries. Do you believe an exhaustive study of this subject should be undertaken?

7. Do you think we should conduct an investigation to show the effect on lime plaster when applied during low temperatures?

8. There is but meager information available as to the manner in which lime plastered walls stand up under the action of fire. Do you think we should lay plans to develop complete information about this subject?

9. Too little is known about a combination of lime plaster on plaster board. Should we not investigate this subject thoroughly and supply ourselves with complete information?

10. Our present specifications for lime plaster on metal lath do not provide for any material, such as cement, to be used with the lime to cause it to increase its strength. On account of the lack of rigidity of metal lath between studs, many architects and plastering contractors feel that lime plaster when hardened does not produce sufficient rigidity, and we consequently meet with strong opposition, especially from contractors. Should we, in writing our new plastering specifications, take care of this objection by providing that the proper quantity of cement shall be used in the scratch coat to stiffen up the lath, or shall we leave the subject open until we have conducted proper test to determine accurate information?

11. Should we not make a thorough study of materials and methods used in decorating on lime plaster?

12. Do you recommend an investigation of the strength of lime and cement mortars for brickwork, with the aim in view of testing the fairness of building codes in various cities?

Association Men Working in Washington

Prominent Producers Urge Immediate Reduction of Freight Rates to Stimulate Construction.

E. Guy Sutton of Indianapolis, Ind., secretary of the National Association of Sand and Gravel Producers, and Geo. J. Nattkemper of Terre Haute, Ind., have been in Washington for several days endeavoring to get the Railroad Administration to reduce freight rates on sand, gravel, crushed stone and slag. This action, they assert, will be beneficial to the building industry throughout the country and immediately will assist in the acceleration of building and construction activities, so much desired by the Department of Labor.

These two representatives of the sand and gravel interests have appealed to F. T. Miller of the Division of Public Works and Construction Development of the U. S. Department of Labor, asking that he interest himself in the freight rate situation. In presenting the situation to the Division, Mr. Sutton made the following statement:

"There are thousands of idle open-top railroad cars in the country today. To utilize these cars is to increase railroad revenues. They can be utilized by the sand, gravel, crushed stone and slag producers if the prohibitive freight rates put in effect during the war are revised.

"The reasons for promoting and stimulating improvement work of all kinds advocated by the various departments of the Government and sanctioned by the President are apparent and in general are as follows:

1. To stabilize labor by providing employment for demobilized soldiers and workmen released from war activities.

2. To tide over the period of readjustment during which time industrial and commercial conditions must be restored to a peace basis.

3. To bring up to a normal state of development the following construction work deferred because of the demands for and transportation of materials of war.

(a) Highways.
(b) Public Buildings.
(c) Private Buildings.
(d) Railroad repairs and extensions.

"Regardless of the evident need for carrying on improvement work with the greatest possible dispatch, the hastening of construction work is being discouraged throughout the country. In analyzing the situation it is found that the reason for delay is the question of cost, involving the items of labor, materials and transportation. All of these factors of cost are high at this time and in consequence thereof, building work that would otherwise proceed is being put off in the hope that the cost wil sharply decline so that appropriations and funds now available may be used for work already projected.

"It will be conceded without argument that wages should not be radically decreased during the existing state of affairs. Moreover, a sharp decline in the price of materials likewise would bring disaster. It appears, therefore, that the only source of relief lies in the reduction of transportation charges applying on basic building materials.

"In this connection it is well to point out that, in consequence of the provisions of General Order No. 28 taking into consideration the disposition of fractions, sand, gravel, crushed stone and slag bore a much greater increase than other commodities, inasmuch as instead of 25 per cent, the advance amounted to from 25 to 150 per cent. It is assumed that the high rate of increase was placed upon these materials in order to discourage the production and transportation of such ma-

terials and to act as a means of curtailing construction work in general during the war period. In view of the reverse conditions now obtaining, it would appear that this form of restraint on building activities might be removed along with other restrictions released by the various war

"Moreover, the freight rates applying on sand, gravel, crushed stone and slag are too high to permit a free movement of these materials and thus the railroads will lose a large volume of traffic that otherwise would be offered, with a consequent decrease in revenue, while at the same time the output of plants engaged in the production of these materials will be greatly reduced by the development of local pits and quarries from which low grade materials are obtained suitable only for inferior work, resulting in enormous investment losses by industries already established.

"On account of the decreased demand for coal due to the cessation of war work and the prevailing mild weather, there is at this time on every railroad in the country a surplus of open-top cars. This surplus will increase as the season of maximum construction approaches unless the movement of other commodities suitable for shipment in open-top equipment is provided for. A car surplus likewise means a reduction in the number of men employed by the railroads, thereby further complicating the labor situation.

"To recapitulate, a reduction in freight rates applying on sand, gravel, crushed stone and slag will accomplish the following results:

1. Stimulate and hasten the promotion of improvement work, thus giving employment for the increasing number of idle laborers.
2. Increase the revenue of the railroads.
3. Provide for use of the great surplus of open-top cars.
4. Permit deferred construction work to proceed without further delay.
5. Remove the discriminating character of General Order No. 28.
6. Encourage the development of permanent wealth which will aid in paying the heavy taxes imposed by the war.
7. Place in circulation idle capital, which will help in floating the next bond issue.
8. Give to the building trades, including contractors and producers of building materials, a chance to recuperate some of the losses sustained by the necessary restrictions placed on construction work during the war.

"In view of the circumstances and conditions which we have related, we earnestly appeal for a modification of General Order No. 28 to apply on sand, gravel, crushed stone and slag, so as to allow the movement of a large volume of such materials, to the end that the foregoing objects may be accomplished.

"With the building season now at hand, the matter is imminent and we urge the prudence of immediate and favorable action."

New Wisconsin Secretary.

O. C. Hubbard has been made executive secretary of the Wisconsin Mineral Aggregate Association, with offices at 332 First National Bank Building, Milwaukee.

Mr. Hubbard was formerly connected with the Chicago offices of the Universal Portland Cement Company.

The Phoenix Portland Cement Company has recently placed from the Philadelphia office an order with the Bradley Pulverizer Company at Allentown, Pa., for an installation of Bradley Hercules mills for the grinding of raw material. These will be used as a preliminary pulverizer before sending the material to the tube mills. The use of the Bradley Hercules mill is meeting with great favor among cement manufacturers, as it produces an extremely large output when pulverizing to a fineness of 50 per cent through 100-mesh sieve and 40 per cent through 200-mesh.

General Types of Plant for Handling Pit Products

IN previous articles on pits, the two general methods of working them have been outlined, including the feature of stripping the overburden from the pit. The next feature of pit work to be considered is that of the plant to be used in handling and preparing the product for the market.

The principal products excavated from pits are gravel, sand, clay, shale, chrome, kaolin, iron, gold and other minerals.

The plant needed for gravel and sand—that is, such as is produced for building purposes, as for concrete, mortar, etc.—will vary with the requirements whether the gravel and sand must be screened or not, or washed or not, or a combination of the two. The gravel or some part of it may also have to be crushed.

If the sand and gravel can be sold as produced from the bank, then the product can be loaded at times directly into wagons, trucks, or railroad cars, and only the excavating plant, as previously outlined, will be needed. If this can not be done, then bins must be provided and the vehicles and cars can be loaded from the bins.

Should the gravel and sand need grading, then a set of grading screens can be built over the bins and the tailings run to a spoil bank. A single screen need only be used if only the refuse and tailings must be taken out of the product. For most sands a single screen may be sufficient, but for gravel, there is not only likely to be sand mixed with it, which may have to be screened out, but also very small gravel as well as large pieces of gravel.

These last, if they are to be sold, must be crushed. For some work specifications now provide that all the gravel must be crushed. For this a stone crushing plant must be used, and then the gravel is screened and graded after it is crushed, just as is stone.

Sand and gravel that must be washed is first passed through the washer, which may be composed of screens, thus washing and screening in one operation, or if this is not done the product is first washed and then screened if screening is found necessary.

Thus a screening and washing plant may consist of merely a few pieces of simple machinery costing only a few hundred dollars, or it may run up to a rather complex plant costing many thousands of dollars. Add to this a crushing plant for gravel and the cost is increased.

For concrete road construction, gravel must be free from clay; and if the gravel has much plastic clay adhering to it, the only way of cleaning it is to put it through a washer. But if only a small amount of clay is mixed with the gravel, it may be washed through a screen, or even by being piled up pyramid shape and a jet of water played upon it with a hose, re-working the pile into the pyramid shape with forks. For a bituminous mixed road the gravel must also be cleaned; while for macadam, a small amount of light clay will help as a binder in compacting it.

Besides obtaining sand from pits for building purposes, it is also produced for many other uses, as making sand brick, concrete blocks, etc. Also sand is produced for making glass and other commercial purposes as metal moulding, cleaning marble with blasts,

for making fertilizers, for asphalt paving, and other uses.

For these purposes varying kinds of plants are needed. For making sand brick at one place in New England, all the plant consisted of was a single screen over a bin holding about a ton of sand, and a belt conveyor to carry it into the brick making plant. This in itself was very complete and was an expensive plant. The same screening and conveying plant furnished sand for making concrete blocks. For some uses sand must be dried. For fertilizers this may only mean storing it in a shed and keeping it from rain and snow, while for other purposes, mechanical heaters or dryers must be used. These may run into a large investment, together with the conveyors for feeding the dryers and taking the sand away to be stored.

Sand Pump Handles Screenings.

A particularly efficient crushing plant is employed at the Ojus, Fla., quarries of Evert P. Maule. The stone is a coralline formation and unusually hard. It is dredged from under water by two 1½-cubic-yard dredges which load into 6-cubic-yard Western side dump cars. The present cut is over a mile in length and from 20 to 25 feet deep. At the crushing plant the loaded cars are hauled up a 40-foot incline railway to the two jaw crushers. The hauling is done by a 3-drum hoist, which also is utilized for spotting freight cars below the crusher. Each 6-yard car as it arrives at the top is dumped into a large hopper from which the stone is fed over a grizzly, the fine stuff dropping through, the coarse going into the crusher. As the rock is carried through the crusher heavy jets of water wash out the fine stuff. A steam pump on top of the plant washes out the cars. A 4-inch sand pump takes away the screenings, discharging them into a muck pond from which this fine material is loaded and shipped for various purposes, it having high cement qualities. The average output of the plant is 50 carloads of stone per day.

Overseas Americans Impressed with French Highways.

Colonel R. A. Tyndall, of the 150th Field Artillery, writing from France to Carl G. Fisher, vice-president of the Lincoln Highway Association, with whom he was closely associated, in the transcontinental tour from Indianapolis to San Francisco in 1913, at which time much of the route of the Lincoln Highway was decided upon, says:

"There will be a couple of million real good roads boosters back in the United States when our boys come home, as I think all of the men over here appreciate how good roads can be made invaluable. To my mind there is no doubt that the good roads of France saved her in two instances.

"I have seen movements of troops made in the dark which would have been impossible in any other country than France. Here the road makers have scientifically planted trees that absorb drainage on the side of the road and at the same time shelter the highways, so as to keep them just moist enough."

The Gould Granite and Marble Works of Jacksonville, Texas, has been incorporated with capital stock of $5,000. The incorporators are L. E. Frank, J. E. Gould and M. T. Sheets.

The Massaponax Sand and Gravel Corporation, Richmond, Va., has been incorporated with a capital of $100,000. The officers are Charles L. Ruffin, president, George M. Davis, secretary, both of Richmond, Va.

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THE better the roads, the more will pit and quarry products be delivered by motor haulage. And the more the highways are used for this purpose, the greater will be the demand for such products. It works in your favor both ways.

ONE man reported at the Buffalo convention that he had reduced his fire insurance rate from $2.00 to 62½ cents. That makes quite a difference in the annual premium when the face of the policy runs up toward a hundred thousand dollars. But it must be remembered that a fire insurance premium covers only the physical loss and takes no account of the weeks or months when production will be suspended for rebuilding. So a fire loss is an expensive thing at the best, even when the insurance company is paying for the actual physical loss, and it is worth while putting in every safeguard and exercising every care to avoid disaster of this kind.

Associations: Local and National.

IN another part of this issue, Mr. E. Guy Sutton gives a most illuminating review of a number of the things affecting the present status of the sand and gravel industry. In the same paper, which could not be given quite in its entirety, he called attention to some of the reasons why organizations of producers are of especial advantage just at this time. He said:

It is obvious that the tendency of the age is toward centralization of governmental functions, of which the proposed League of Nations is the consummation. Governmental control of public utilities, though it may not be through direct ownership, will gradually but surely come, and closer supervision of private industries may be anticipated. In both events the Government will deal with the industry and not with the individual, and for this eventuality a national organization is essential. As a suggestion, such dealings may have to do with the fixing of prices, especially covering the purchases made by the Government or for work done under its direction, such as procuring materials for the building of highways and maintenance of roadways.

The local association, too, has a distinct and valuable function to perform, as Mr. Sutton also pointed out:

It is through the local associations that the producer learns to know his competitor and to have faith in his word and to sincerely wish him success. Men who are acquainted are not likely to take advantage of each other. Then, too, the producers within a given district operate under similar conditions and through the local association there is an opportunity presented to compare costs, with the result that selling prices are established that are above the cost of production. There is nothing illegal about talking with your competitor concerning prices, so long as there is no combination effected in restraint of trade. In fact, the Government looks with as much suspicion upon the firm that sells without profit as upon the man who may be guilty of extortion.

But aside from the advantages to be gained by these more intimate relationships, there are many questions arising within the state that are of a purely local character. For instance, the enactment of laws affecting the building of highways. And, after the contemplated laws become effective, there is work to be done to see that sand and gravel is specified and used, at least in fair proportion to other available materials, in the building of the roads that will be offered for construction.

In fact, as a general proposition a local organization is necessary to make the work of the national association effective, since there must be a point of contact with the smaller units and finally the individual in any scheme of organization.

ARE you personally acquainted with your competitor? No? We thought not! Then you are scarcely in a position to pass judgment upon him. We happened to meet him the other day, and can assure you that he is a real human being, trying to make an honest living, as you are, for a nice little family which he likes just as well as you like yours. Better go over and get acquainted with him.

Here is what one Michigan producer prints prominently on his letterhead:

All quotations subject to current freight rates and the consignee pays the special war tax.

So in this way he passes the buck to the purchaser—where it belongs.

THIS year's conventions demonstrated unmistakably the value of the organization idea in modern business. The men who attended have had their periods of frolic, to be sure; but the convention sessions have been more like a meeting of the board of directors of a big corporation than anything else. They have without doubt succeeded in laying the foundation for bigger, better business.

Better Than Booze.

PROHIBITION will eliminate many of the troubles of the plant operator. They may not all of them disappear during the present generation, for we are perfectly willing to agree with the opponents of prohibition that the constitutional amendment will not fundamentally change human nature. But the liquor habit is very largely a matter of environment; and there is no question but that prohibition will alter the laborer's environment so that the next generation will grow up with much more temperate habits.

Most producers know what a hindrance liquor has always been in the orderly and economic operation of a plant, and they will welcome the new order of things, even though they may belong to the class of men who will look with some regret at the depletion of their own sideboards.

Worth All It Costs.

IT is sometimes stated that accident prevention is worth all it costs; meaning that if an operator spends each year as much in safeguarding his plant as he would otherwise spend in benefits to injured employes, he is actually ahead of the game.

He really benefits financially; because every time a capable and experienced employe is away from his place, the tendency is for production to decrease and consequently for the unit cost to increase.

The operator who avoids accidents is also vastly ahead so far as his general standing is concerned. It is well worth while for a plant to earn a reputation of never having accidents. Such a plant will secure a better class of labor, it will command the loyalty of the laborer, and—what is just as important—of the laborer's wife as well.

Getting the Money to Make Improvements

This Does Not Necessarily Mean Increased Capital—Often It Can Be Saved by a Little Attention to Efficient Operation.

By Daniel J. Hauer

MANY quarry owners and managers believe that a large bank account is an essential to increase the efficiency of their quarries. There is little doubt that ample cash allows of improvements being made as desired; and with many changes and betterments effected, wastes can be cut out and greater efficiency obtained. But again and again quarrymen are heard to say that a lack of capital compels them to continue old methods and thus keep the cost of production big. One manager stated that if he had two hundred dollars to expend in one of his company's quarries, he could accomplish much in obtaining greater efficiency. It is true that a business can be ruined for the lack of a small sum of money. In one case a large manufacturing concern went by the board for as small a sum as two hundred and fifty dollars. In spite of these things being true, efficiency is not dependent entirely on finance.

An even broader statement can be made in regard to quarrying. Efficiency can be so applied to the quarrying of stone as to solve some of the problems of financiering, thus making finances depend to some extent upon efficiency, rather than greater efficiency depending upon finances.

This can be explained by citing some examples showing how a quarry expert has handled some work of this kind in quarries where it was not possible to expend more than the money being used for the regular payroll. That is, the management could not borrow money or show expenditures for improvements.

The first quarry was a fairly large one, having a capacity of about a thousand tons of crused stone per day. Actually about 600 tons were being produced, as shown by the weights of the quarried stone at the tipple of the crusher.

The low two-ton quarry cars were loaded by hand. Some time studies of this work showed that as two men working together loaded a car, they took it to the crusher. The grade on the tracks being with the load, an average of the time consumed from the breast to the scales was 2½ minutes. To weigh and take the car to the tipple consumed 1½ minutes. Three minutes were used to take the car back to the ledge. Thus a crew of two men wasted seven minutes every time a car had to go to the crusher.

It will be interesting to see what this item cost. With fifteen crews or thirty men loading cars and each crew taking out two cars an hour, each crew lost during the 10 hours 240 minutes, a total of 70 man hours for the thirty men loading. At 20 cents an hour, the rate then paid, the cost was $14.00 per day.

The quarry expert wished to put horses at work handling these cars. The company did not have money to purchase the horses. However, two horses were being used to clean up some overburden that had fallen upon the quarry floor. As this material would not be in the way for several

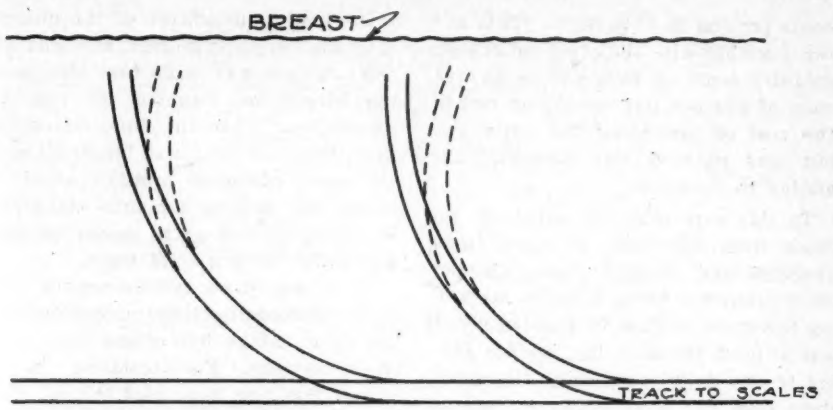


FIG. 1- SHOWING TRACK ARRANGEMENT

months, much against his will the superintendent was prevailed upon to let these horses be used to pull the cars. This was done at a cost on two horses of $1.50 per day each, figured for feed, harness, interest and depreciation. The two drivers were paid each $2.00 per day. A third man at $2.00 per day was employed to move the cars from the scales to the tipple and place them for the horses to pull back, two cars coupled together. Thus a saving of $5.00 per day was effected. In sixty days this amounted to $300, enough to purchase two horses for the cars or carts.

Cutting out this waste made necessary the elimination of a feature that effected another saving. Fig. 1 shows a common arrangement of track found in many quarries, this being the layout in this particular quarry. When the men pushed the loaded cars to the crusher, the track arrangement was satisfactory, for the car was brought back and placed on the same sidetrack to be reloaded. When horses were put to handling the cars the men were idle, with this track arrangement, until either the same car was unloaded and returned or another car from the main line could be shifted for loading. This meant a defeat of the saving effected by using horses. Accordingly a second side rack was laid to the face of the ledge as shown by the dotted line.

With this arrangement, while the men were loading one car, a second car was sent to the crusher and returned, being placed on the other track ready for loading. As only passing room was allowed between these two tracks, the men made ony a few steps to move from one car to the other, losing but a few seconds.

Under the old method of working, a crew of two men loaded a car of about 2 tons every half hour, or twenty cars in 10 hours, equaling about 40 tons. With 15 crews this meant about 600 tons of stone carried to the crusher. The time record showed an average of 23 minutes to load a car and 7 minutes to go to the crusher and back. With two loading tracks on each leg of track, against the breast, it was found that two men loaded an average of 25 cars per 10 hour day, equal to about 50 tons. Thus in the 15 crews, there was now sent to the crusher about 750 tons daily, instead of 600 tons. With forty laborers employed in the quarry and at the crusher plant the cost for labor for loading and crushing was decreased from 13⅓

cents per ton to 10⅔ cents. This saving, together with the overhead charge, meant 4 cents on each ton, or an average of $30 per day saved; or rather, the cost of producing the day's output was reduced this amount, thus adding to the profit.

To this sum must be added the income from 150 tons of extra stone quarried and crushed daily. If ten cents a ton was being made in marketing the stone, the net increase of profit was at least $50 each day, besides adding to the daily receipts by the extra stone sold, say about $100.

As an offset to this was the cost of extra track, switches, etc., and the money invested in extra cars. If these had had to be purchased the charge per day for them would not have exceeded five or six dollars. In this case not a car had to be purchased as the company owned more than forty cars, the use simply being distributed over a larger number. There was ample track, it being laid where it was not in use. This was taken up and used. However, there were not enough switch points and frogs. Accordingly some frogs were made of hardwood at the blacksmith shop and used until worn out, before which time enough money was earned and saved to purchase additional frogs. Old style stub switches were made and used until money was available to buy some additional switch points.

These things and many more were done against the protest of the officials of the company, who felt that no one could get a larger output from the quarry than they were obtaining or effect any economies over those they saw. As to the output, the management stated that the plant was designed for a thousand tons, yet nothing like that was obtained. But the fault was not theirs, for they blamed most of their troubles upon the manufacturer of machinery.

Gradually the officers of the quarry company were won over and change after change was made that increased the output and lowered the cost of production. Then the financial condition of the company was improved and increased efficiency brought about a better and sounder financial standing. Money saved and extra money earned was better than a bond issue.

What was done in this quarry can be duplicated in others; possibly not the same things but others that will effect savings. For instance, in a quarry two men were used to push the cars onto a tipple, and then push them back, so that they could be reached with a horse and pulled away. The grade being with the load, the two men were not needed for the loaded car, but for the empty, it having to be pushed up the grade. The track layout was as shown in Fig. 2, at the top, with a grade as shown by the profile. Then the track for empties was graded so that with a push from the man the empty car coasted down the lowered track, running up to where the horses could get it. By this arrangement, costing less than $50, a man was saved, being $2.25 per day, so that in less than a month this change was paid for on the regular payroll. The saving effected in a season was nearly $500.

In another case the track at the crusher was changed so as to save a laborer and yet feed the crusher quicker than it had been fed.

The output of any crusher is dependent upon the stone fed to it, and if the quarried stone is brought to the crusher by spasms, then the crusher is running idle part of the time, so that certain charges are going on without any production. A grist mill or a cement grinder would not be run in this manner, neither should a stone crusher. Many gyratory crushers, even if the stone is brought to them in ample quantities, are so fed as to

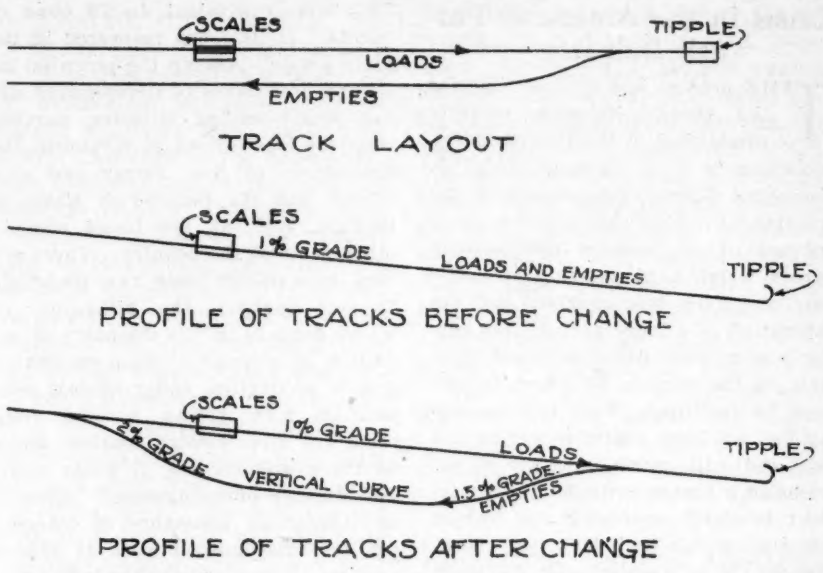


FIG #2- SHOWING CHANGE IN TRACKS TO SAVE A MAN

crush stone on one side of the crusher. This is due to the tipple or feeding chute being arranged improperly. It means curtailing the output of the crusher by from one-third to one-half, and generally the employment of an extra man to help putt the stone around the crusher. A re-arrangement of tipple or chutes, generally at small cost, will reduce the labor item to the minimum and place the output at the maximum. Increase the output of a quarry one-quarter to one-third, without materially increasing the pay-roll, with the drilling, power-plant and overhead charges remaining the same, and it will not be long before a surplus of money can be obtained to make much needed improvements.

In many cases it is the re-arranging of the many details that increases efficiency and saves money to allow such expenditures to be made as will give better operating machinery, with increased production at less cost.

Even if ample money is available these details must be looked into and placed upon a more efficient basis, so that all wastes are eliminated.

ONE manager of a stone crushing plant related at the Buffalo convention that he formerly had been in the habit of getting in wrong with the stockholders of his company one or two months each year.

These were months when big repairs had to be made, eating into the profits so appreciably that there was little left to divide among the stockholders.

In order to do away with this periodical source of trouble, he adopted the plan of charging off $500 each month for repairs whether any repairs were made during this month or not. This provided a fund for taking care of repairs when the necessity did arise, equalizing the expenditure over the year, as should properly be done, and keeping the stockholders better satisfied.

Crisis in the American Potash Industry.

THE present is a critical time for the potash industry recently established in the United States, according to H. S. Gale, of the U. S. Geological Survey, Department of the Interior. Prior to the war this country used more than a million tons (gross weight) of potash salts each year, and it has been supposed that the cutting off of a large part of this supply was a keen deprivation, particularly to the farmer, by whom it was used for fertilizer. This foreign supply has not been available during the war, and with much energy and enthusiasm a domestic production equivalent to about one-fourth the former importation has been built up. Now, however, it is unexpectedly disclosed that there is little or no market for potash either at the high prices that have prevailed or even at a considerably lower price. No satisfactory explanation of this situation seems to be offered.

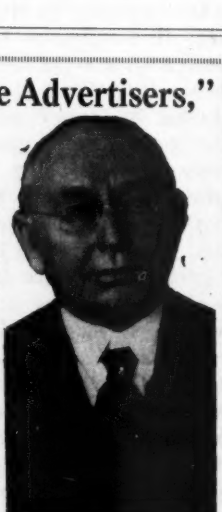
PROMISE FOR THE FUTURE.

The potash recovered as a by-product from the dusts of cement and blast furnaces bears great promise for future production that may be maintained in the face of competition. It appears that a quantity of potash equivalent to nearly one-third of our normal annual requirements is now going to waste in cement-furnace dusts. The quantity lost in blast furnaces seems even greater, but we are probably not yet in a position to say what part of this is practically recoverable. The cement dust collected in the first six months of 1918 amounted to 5,909 tons carrying 658 tons of "actual" potash, which was less than 3 per cent of the total domestic production. The recovery from cement dust increased during the latter part of 1918. Blast-furnace dust amounting to 792 tons, equivalent to 79 tons of "actual" potash, was recovered in the same period. Among the potential resources in process of development are the potash-bearing silicates, particularly the leucite rock of Wyoming, the greensands of New Jersey and elsewhere, and the potash-rich slates of Georgia, such as are found also in other parts of the country. There are vast reserves of these raw materials in this country, the utilization of which depends on the discovery or operation of processes cheap enough to permit production under normal competition with potash derived from other and from foreign sources. Many of these projects are of great merit and deserve encouragement. Even if no substantial assistance in carrying out the experimental work is offered to them, at least it is to the interest of the American public that they shall be allowed a fair chance to establish themselves.

"I Patronize Advertisers," Says Porter

Jno. S. Porter is secretary and manager of the Huron Shore Gravel Co., Saginaw, Mich., and secretary of the Michigan Sand and Gravel Producers Association. Besides which he is a commanding figure in the National Association. He says:

"I have begun to look forward to getting PIT AND QUARRY each month, not only for the interesting and instructive articles about the sand and gravel business, the excellence of the cuts and typographical work, but also for the high class of the advertisements that you carry. I have frequently found it opportune and profitable to patronize your readers."



Jno. S. Porter

"It Looks Good to Me!"

Jobs for the Soldiers.

EMPLOYERS of labor are to have a most important part in the rehabilitation of two hundred thousand American men disabled in the war. According to a monograph, "What the Employers of America can do for the Disabled Soldier and Sailor," recently issued by the Federal Board for Vocational Education, the success of the government's big program of dealing with the men who have borne the brunt of battle, to a great extent, depends upon the attitude and coöperation of the employer.

It is the intention of the government to assist in replacing each man, regardless of his handicap, in suitable civil employment. The men are not to be dealt with from the viewpoint of giving them special "soft" jobs. Sympathy and charity are neither needed nor desired. On the other hand, the employers of America are requested to consider the employment as a business proposition. More harm than good will be done to the disabled man if he is merely "taken care of" in a job in which he cannot make good and earn advancement.

The government has provided that its disabled man may be retrained in order that he may overcome his handicaps and be reestablished as an efficient worker. Through the coöperation of the employers definite jobs will be made available. The training of each individual will be made thoroughly practical and pointed toward a specific occupation to which he may go when he is industrially fit.

The utmost care is to be taken that each man is trained for and placed in a job in which he can make good. Each case will be considered individually on its merits by experts of the Federal Board and by a physician, an employer and a representative of labor in the home district of the man who is to be trained. An effort will be made to place each man in the occupation in which he is most interested, provided it is neither waning nor overcrowded. While it is the policy of the Federal Board to return the man to his former occupation, it can, if deemed advisable, train him for an entirely new trade. In each case the previous education and experience and the nature of the man's handicaps will be given full consideration in determining a suitable occupation.

Coöperation of the right kind is sought. Every employer will do well to learn his part in this great work for the disabled soldier and sailor. Inquiries should be addressed to the Federal Board for Vocational Education, Washington, D. C.

Power for Cement Quarries

Quarry drills are commonly operated by compressed air, steam, or electricity obtained from the central power house of the cement plant. Where the quarry is situated at a considerable distance from the cement plant a separate power plant may be necessary. Shovels for loading rock or overburden may be operated by electricity, compressed air or steam. The steam shovel is the more common type, and coal is almost invariably used for fuel. The power cost depends largely on the availability of a coal supply. In one of the Ohio quarries visited, a thin bed of coal beneath the limestone supplied fuel for the steam shovels.

In quarries of wide extent, situated in localities where the winters are severe, the loss of power in long steam lines may be considerable. If it is found advisable to use steam for drills in such quarries, power losses may be minimized by establishing several small boiler houses near the drilling operations rather than conveying the steam long distances from a central generating plant.

Hydraulic Stripping

By Oliver Bowles

Hydraulic stripping is practicable only where there is an abundant water supply and good drainage. If the conditions are favorable, it is one of the cheapest methods that can be used.

The usual method of hydraulic stripping is to pump the water through pipes and force it at high pressure through a nozzle directed against the bank. If the water has to be pumped some distance, it has been found advisable, in order to reduce the loss of power by friction, to use pipe of 4 or 5 inch diameter, close to the pumping station, and to reduce the size at successive intervals. The jet from the nozzle is usually so directed as to undermine the material and let it fall in a loose mass. It is then easily carried away in the stream. It is obvious that boulders too large to be washed away retard the progress, and if the material contains many boulders the use of a steam shovel may be preferable.

In a quarry in northeastern Missouri where this method is employed a ravine affords a means of drainage back from the quarry face. As the material is rather hard, holes 8 to 10 feet deep are bored with a soil auger, and the ground is loosened with small charges of explosive. The cost of stripping is said to be about 7 cents a cubic yard.

An Indiana Example.

In an Indiana quarry stripping with steam shovels is supplemented with hydraulic stripping during seasons when the water supply is adequate. The material is washed down a channel, which is nearly parallel with the quarry face, and into a creek. A settling basin has been provided, but complaints are sometimes made of the turbidity of the stream below the basin. The effects of hydraulic stripping may be far reaching, and the operator must carefully consider a possible conflict with other interests.

In one quarry in eastern Missouri the conditions are unusual. The quarry is situated on a bluff facing the river. The water supply is, therefore, abundant, but the drainage is toward the quarry face, whereas in most localities where hydraulic stripping is practiced the water may be drained away from the quarry pit. Owing to this condition, the soil-laden water must be conveyed through an aqueduct from the quarry face to the river bank. However, the operators claim that the cost of hydraulic stripping, including the construction and maintenance of the aqueduct, is considerably lower than with steam shovels.

A Virginia Plant.

At one Virginia plant, where the hydraulic method is employed successfully, the quarry faces the river. The overburden consists of red clay and sand, varying in thickness from 2 to 15 feet. Clay seams and clay pockets are abundant. Stripping is conducted during the winter months, when the resulting turbidity of the stream causes the least inconvenience to other industries. Work on rock quarrying is suspended during the stripping. The rock surface dips toward the river, and the overlying material is washed down onto the quarry floor. A row of barrels filled with earth placed near the river bank serves as a dam or weir to hold back the bulk of the stripped material, which would otherwise obstruct the stream. This material, after it becomes comparatively dry, is loaded into cars with a steam shovel and removed to a dump.

To those unfamiliar with the conditions in this quarry, it would seem more reasonable to remove the over-

burden with a steam shovel in the first place. The rock surface is, however, so deeply eroded that steam-shovel work would be impossible.

ROCK WASHING.

In some localities quarrying is made difficult by open seams or pockets that extend many feet down into the rock. The material with which these erosion cavities are filled may be undesirable as a cement constituent. The hydraulic method of cleaning out such cavities is very successful where it can be employed. The usual method, however, is to clean the seams as well as possible by slow and laborious hand methods. The material that can not be thus removed is shot down with the rock. The subsequent sorting which is necessary makes it undesirable to use a steam shovel, and hand-loading methods are employed. When the good rock is removed, the fine debris is loaded by hand into cars and removed to a dumping ground. The high cost of loading both rock and waste by hand would seem to justify the introduction of a more economical method.

The writer is of the opinion that in many quarries where such conditions are found, a much better method would be to load with a steam shovel, taking rock and soil indiscriminately, and after crushing the material, pass it through washing screens. A sufficient water supply, of course, would be essential. The cost of installing a washing equipment would not be high. With sandy or other friable material, the success of such a method would seem to be assured. It would not, however, work as successfully with sticky clay, which would be difficult to wash out. Also the crushing of rock mixed with clay may involve great loss of time in wet weather.

Tells About First Stone Crushing Plant.

Story of an Old-Timer Who Got to Relating Ancient History at Buffalo

ONE of the delegates at the Buffalo convention drew a crowd around him in the ante-room of the convention hall by telling about the first stone crusher he ever saw.

"I was living in a little town up in President Blair's state," he said, "and although the house where we lived was but a couple of squares from the main business section of the town, the street became a regular sink hole after the spring rains

"Then the spirit of progress fired the soul of the village fathers and they decided that the principal streets of the town must be macadamized.

"And then there appeared, out in the middle of a field, on the way to one of the favorite swimming holes, a contraption which we were told was a stone crusher. As I remember it, it was just a hopper with a small crusher concealed somewhere about it. The location was on a side hill, so that it was possible to arrange a driveway up to the level of the top of the hopper. The driver would thus come in from the quarry with a load of stone, and drive up and dump his load in the hopper. Then he would drive down and spot his wagon under the spout from the crusher.

"This accomplished, he would start the crusher to running—I have forgotten what the power was—and when the load had been crushed he would shut off the crusher and drive away to deposit his load on the street.

"It was in this way that much of the early macadamizing was done. And, for that matter, some of the European countries are doing it in about that fashion today."

Figures on Lime Output for 1918

THE estimate of the production of Lime in the United States in 1918 is 3,028,000 short tons. This is a decrease of 20 per cent from that of the previous year.

The estimate is based on returns made by the principal producers to G. F. Loughlin, of the United States Geological Survey. Of the 41 producing States and Territories only South Dakota, New Mexico and Tennessee, reported increased sales. The increase in Tennessee—17 per cent—is in striking contrast to the decrease in all other States that reported considerable production. The percentage of decrease varied within wide limits; Michigan lost only 2 per cent and Indiana 3 per cent, whereas California lost 37 per cent, Wisconsin 38 per cent, and West Virginia 45 per cent. Even greater decreases were reported from some of the States that made only small production; Florida lost 54 per cent, Oregon 55 per cent, Idaho 76 per cent, and Rhode Island 96 per cent. All producers reported that prices in 1918 were 10 to 35 per cent higher than in 1917, and the total value may, therefore, not show marked change.

The sales of hydrated lime in 1918 amounted to about 627,000 short tons, a decrease of 11 per cent from the quantity reported in 1917 (709,757 short tons), which in turn was a decrease of 1.6 per cent from the record production of 1916 (717,382 short tons). Of the principal producing States eight showed increases in sales ranging from 2 per cent in Pennsylvania to 34 per cent in Maryland and 52 per cent in Virginia. The output of ordinary quicklime, including some dead-burned high-magnesium lime for refractories, decreased nearly 22 per cent, from 3,072,207 short tons in 1917 to 2,401,000 short tons in 1918, a decline which indicates that in spite of the adverse conditions hydrated lime held its position far better than quicklime.

War restrictions on the building trades greatly reduced the demand for building lime, the production of which in 1917 amounted to one-third of the total lime output. Manufacturers of building lime, except those who supplied Government contractors, reported decreases in demand ranging from 5 to 90 per cent in 1918, and some plants that supply only building lime were closed throughout the year. A number of Government building projects, most of them in the East, had called for or were likely to call for lime during the last two months of the year, but some of these projects may have been abandoned after the armistice was signed on November 11. All restrictions placed by the War Industries Board on the production and transportation of lime were removed on November 12, too late to have any appreciable effect on the recovery of the industry before the end of the year. In view of these conditions it will not be surprising if the revised and itemized figures show that the building lime sold in 1918 has fallen to about 900,000 short tons and that building lime has for the first time lost to chemical lime its lead among the lime products.

Sales of chemical lime, stimulated since 1914 by war needs, continued to increase. Most manufacturers reported the demand to be from 2 to 70 per cent greater than in 1917, and only a few reported a decreased demand. The output was curtailed, however, by shortage of labor, fuel, and transportation facilities. From 1908 to the early part of 1914 the sales of chemical lime had been increasing steadily and on the whole uniformly. This normal rate, however, was much more gradual than the rate from 1914 to 1918, and the return to normal conditions in 1919 may

ESTIMATED PRODUCTION OF LIME IN THE UNITED STATES IN 1918

	Total lime		Hydrated lime	
	Quantity (short tons).	Percentage of change from 1917.	Quantity (short tons).	Percentage of change from 1917.
Pennsylvania	800,000	—14	145,000	+ 2
Ohio	350,570	—27	225,750	—29
Virginia	255,880	—18	11,310	+52
Missouri	199,850	—15	32,250	+.4
West Virginia	134,270	—45	41,350	—20
Michigan	133,410	— 2	(a)	— 1
Tennessee	118,800	+17	16,970	— 9
Massachusetts	117,840	—13	(a)	—21
Indiana	115,300	— 3	24,490	+12
Maryland	113,110	—15	27,610	+34
Wisconsin	105,260	—38	18,200	b+
New York	93,470	— 4	8,880	+ 4
Maine	88,670	—30	(a)	—10
Illinois	64,670	—22	(a)	—30
Connecticut	(a)	—17	(a)	+36
Alabama	49,730	—25	6,430	— 2
California	48,930	—37	3,230	— 8
Texas	44,710	—15	15,480	+10
Vermont	31,820	—31	(a)	—42
Undistributed	161,600	....	50,000	....
Approximate total	3,028,000	....	627,000	....

a Included in "Undistributed."
b Sales not disclosed in 1917.

therefore be accompanied by decreased sales of chemical lime. Continuation of the normal rate of increase would indicate sales of less than 700,000 tons in 1919.

Producers of agricultural lime were about equally divided in reporting the demand as good, poor, or practically unchanged. In some regions the demand could not be supplied, owing to shortage of labor and fuel. High cost of production caused many kilns that are operated on a small scale for local farm used to be closed. The high prices prevailing for all kinds of lime probably reacted more against agricultural lime than against any other kind, especially in curtailing purchases by farmers with small capital. Government restrictions also tended to discourage production. Early in 1918 there was great difficulty in obtaining cars, but in March the Railroad Administration agreed to give agricultural lime and pulverized limestone preferred classification for 60 days.

The demand for lime by other than the building, chemical, and agricultural industries was reported by 13 producers as poorer than in 1917, by 9 as about the same, and by 4 as better. Decreased demand by paper mills and sugar factories and greater demand by steel mills were noted. The quantity sold annually to paper mills, after increasing slightly from 1909 to 1912, decreased markedly until 1915. In 1916, owing probably to a greater demand for domestic wood pulp, sales of lime to paper mills increased rapidly and reached record figures, which were exceeded by a small margin in 1917. In 1918, however, the paper industry was impeded by a shortage of necessary supplies, which evidently accounts for the decreased demand for lime. The demand in 1919 by the paper industry may be favored by relief from the war shortage of materials, but it may be lessened by restoration of imports of wood pulp to a pre-war basis. These conflicting conditions and the varying demand prior to 1916 render a forecast of the demand in 1919 of little value.

Sales of lime and of limestone to sugar factories have fluctuated annually since 1910, and a decrease in 1918 after an increase in 1917, adheres to this rule, which, however, is no indication of the status of the sugar industry, but rather an indication that sugar companies, particularly in California, lay in a surplus of lime or limestone on an average every other year. The high prices prevailing in 1918 would naturally have discouraged the maintenance of a surplus, and continued high prices may result in the purchase of only the quantity immediately needed in 1919.

A charter has been granted the Blue Bell Lime & Stone Company, Inc., of Wilmington, Del., to purchase, mine and quarry limestone. C. L. Rimlinger, M. M. Clancy and P. B. Drew are the incorporators.

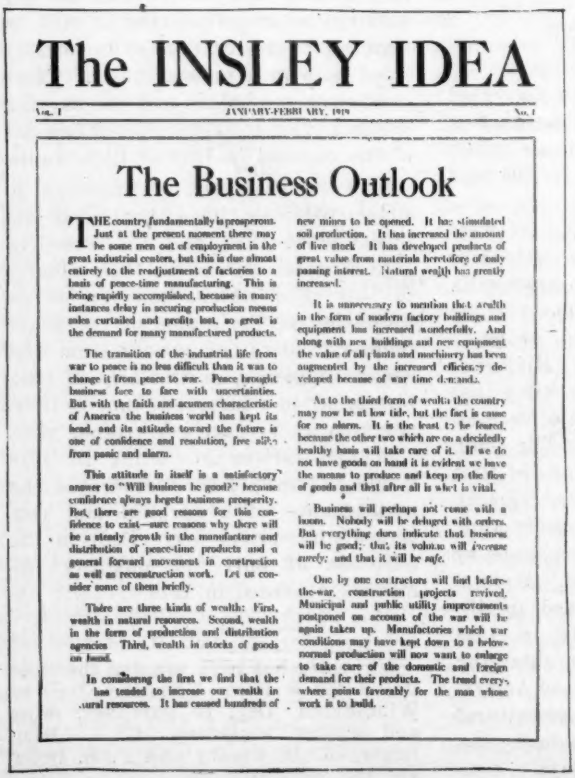
Cement Man Tells Facts

TO every member of the Oregon Legislature has been mailed a copy of a letter addressed to R. A. Booth, member of the State Highway Commission, by the Oregon Portland Cement Company, giving information as to the cost of its product. The letter is in answer to an alleged statement of Mr. Booth that he had been "informed that cement could be produced for close to 24 cents a barrel, but that it cost the commission more than $2 a barrel."

A. G. Clark, manager of the Home Industry League, says the Oregon Portland Cement Company is actually threatened with the necessity of closing down because of adverse conditions that prevent use of its products in construction work in the state. Recently, when a large quantity of cement was required for irrigation construction work in Eastern Oregon, the contract went to a Utah concern because the existing freight rate is more favorable than from Oswego, where the Oregon plant is located, though the mileage was shorter from the latter place.

L. C. Newlands, general manager of the cement company, states that 240,000 barrels of cement manufactured in 1918 cost the company $1.50 a barrel, in the bins. Freight, power and fuel oil represented 86 cents of the cost of each barrel. Sacking, loading and selling expenses had to be added to the manufactured cost.

The suggestion made to the State Highway Commission of operating a state-owned cement plant is used by Mr. Newlands to suggest that the companies owning plants in Oregon, of which there are two, would be glad to have the state take over and operate their plants without purchase if the stockholders could be assured a return of 5 per cent on their investment.



The INSLEY IDEA

Vol. I JANUARY-FEBRUARY, 1919 No. 1

The Business Outlook

THE country fundamentally is prosperous. Just at the present moment there may be some men out of employment in the great industrial centers, but this is due almost entirely to the readjustment of factories to a basis of peace-time manufacturing. This is being rapidly accomplished, because in many instances delay in securing production means sales curtailed and profits lost, so great is the demand for many manufactured products.

The transition of the industrial life from war to peace is no less difficult than it was to change it from peace to war. Peace brought business face to face with uncertainties. But with the faith and acumen characteristic of America the business world has kept its head, and its attitude toward the future is one of confidence and resolution, free alike from panic and alarm.

This attitude in itself is a satisfactory answer to "Will business be good?" because confidence always begets business prosperity. But, there are good reasons for this confidence to exist—sure reasons why there will be a steady growth in the manufacture and distribution of peace-time products and a general forward movement in construction as well as reconstruction work. Let us consider some of them briefly.

There are three kinds of wealth: First, wealth in natural resources. Second, wealth in the form of production and distribution agencies. Third, wealth in stocks of goods on hand.

In considering the first we find that the has tended to increase our wealth in natural resources. It has caused hundreds of new mines to be opened. It has stimulated soil production. It has increased the amount of live stock. It has developed products of great value from materials heretofore of only passing interest. Natural wealth has greatly increased.

It is unnecessary to mention that wealth in the form of modern factory buildings and equipment has increased wonderfully. And along with new buildings and new equipment the value of all plants and machinery has been augmented by the increased efficiency developed because of war time demands.

As to the third form of wealth the country may now be at low tide, but the fact is cause for no alarm. It is the least to be feared, because the other two which are on a decidedly healthy basis will take care of it. If we do not have goods on hand it is evident we have the means to produce and keep up the flow of goods and that after all is what is vital.

Business will perhaps not come with a boom. Nobody will be deluged with orders. But everything does indicate that business will be good; that its volume will increase surely; and that it will be safe.

One by one contractors will find before the war, construction projects revived. Municipal and public utility improvements postponed on account of the war will be again taken up. Manufactories which war conditions may have kept down to a below-normal production will now want to enlarge to take care of the domestic and foreign demand for their products. The trend everywhere points favorably for the man whose work is to build.

"Service and Saving."

The Insley Manufacturing Company, Indianapolis, has just started an attractive new publication, called The Insley Idea. It is, as stated under its heading, "Devoted to Service and Saving."

The first page of the initial number contains some wise observations on the present business situation.

Elevating, Conveying

and

Power Transmitting MACHINERY

for

Gravel, Sand and Stone Plants

SCREW AND BELT CONVEYORS.

BUCKET ELEVATORS, with buckets on chain or belt, furnished with or without steel casings.

BUCKETS—standard types in steel or malleable iron, steel buckets of special design made to your specifications.

GEARS—MACHINE MOLDED or with CUT TEETH.

CHILLED RIM SPROCKETS.

CHAIN—standard malleable detachable, Ley bushel, steel or malleable roller.

SHAFTING, PULLEYS, BEARINGS, FRICTION CLUTCHES.

Send for Catalogue No. 38

H. W. CALDWELL & SON CO.

CHICAGO

Western Ave., 17th and 18th Sts.

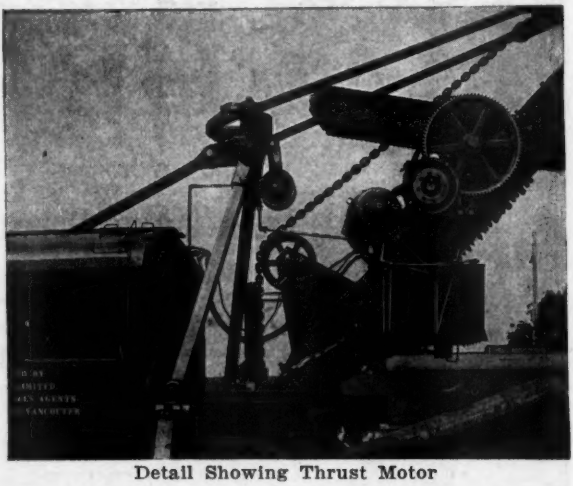
Motor Driven Shovels and Dragline Equipment.

As a notable means of economy and wherever electric power is available, electrically driven shovels or draglines are used for stripping overburden, excavating, dredging, reloading, and similar work.

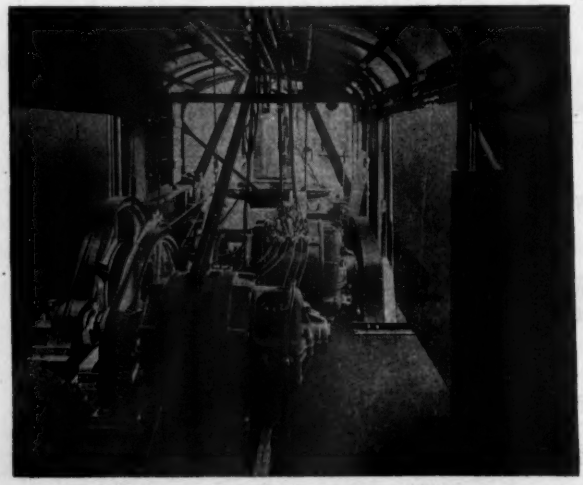
The advantages arising by the use of the electrically driven shovel and dragline are as follows: lower operating cost, when fuels are scarce, expensive and hard to transport; a fewer number of operators are required; fuel is not an essential; there is no water to supply or freeze; no boiler, or boiler troubles, no stand-by losses, no smoke, no sparks, no objectionable noises, and more material can be handled in a given length of time than by other means.

A complete line of shovel and dragline equipment which meets the especially severe service encountered in such work, has been designed by the Westinghouse Company. Simplicity is a leading feature of the apparatus tending to give it reliability in operation without skilled and frequent attention.

Both alternating and direct-current equipments can be furnished. In general, the location of the shovels make alternating-current equipment preferable because alternating current can be transformed more economically, and by using the alternating-current motors the necessity of converting alternating current to direct current is eliminated, resulting in simpler equipment.



Detail Showing Thrust Motor



Hoist and Swinging Boom Motors

The motors are of the wound rotor type capable of exerting powerful effort at the instant needed in the cycle of operation. Each motor is mounted on a massive frame with a strong shaft and amply large well supported bearings of the oil-ring type. The rotating part is of small diameter and consequently has a low fly-wheel effect, which permits rapid starts, stops and reversals. The motors have

Link-Belt Plus Raymond W. Dull Experience Means Successful Plants

Sand and gravel washeries must be designed and built to suit local conditions. To make each plant highly successful requires specialized engineering skill. This skill has been attained by the engineering departments of both the Link-Belt Company and Raymond W. Dull Company as a result of years of specialization, during which time they designed over three-fourths of the modern, successful sand and gravel plants of the United States.

Backing this engineering skill are the adequate manufacturing facilities of the Link-Belt Company for the production and prompt delivery of the mechanical equipment for the complete plant, including Conveyors, Scrubbers, Screens, Drag Line Excavator Buckets, etc.

LINK-BELT COMPANY

Chicago Philadelphia Indianapolis

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LINK-BELT

Gravel Washing Equipment

We Also Make

Elevators and Conveyors.
Link-Belt and Sprockets.
Silent Chain Drives.
Buckets.
Electric Hoists.
Locomotive Cranes.
Wagon Loaders.
Screens.

Write for Catalogs.

few wearing parts and require little attention except for an occasional oiling.

The controllers are simple and compact and are designed and arranged that the operator can, by manipulating his master switches, cause the shovel to respond to his every wish and with facility. By means of the protective features of the controllers, the shovel or dragline can be operated at its maximum rate of operation without injury to attendants or equipment and without loss of time.

On account of the ease and simplicity of control and the savings in power cost, by the use of the Westinghouse motor-driven shovels and dragline equipment, not only can more material be handled, but more material at a lower cost per cubic yard.

Industrial Motor.

An industrial motor especially suitable for work around pits and quarries is built by the L. A. Leathers Company, Brookville, Pa. This motor is claimed to replace four mules and to operate on five gallons of gasoline a day.

About a year ago this concern built the first motor as an experiment, in an effort to eliminate the use of mules on a long haul at a mine too small to warrant the installation of a power plant, or the purchase of the more expensive type of mine locomotives.

The experimental motor was built by mounting a Ford chassis on a substantial white oak truck fitted with flanged wheels for use on the mine track.

Several features have been added to eliminate some of the inherent automobile characteristics not suitable for this type of haulage.

New Catalogue.

The new general catalogue of the Gifford Wood Company, Hudson, N. Y., comprises nearly 500 pages. When it is understood that this catalogue is printed on heavy enameled paper, with illustrations on practically every page, and bound in durable cloth binding, it will be realized that this is a volume of considerable value and must necessarily be representative of a large and successful line of goods.

That part of it which will be of special interest to the readers of PIT AND QUARRY is the section covering elevating and conveying machinery, belt conveyors, screens, etc.

These people have developed an extensive line suitable to a great many different needs, so that in the matter of elevating and conveying equipment they are prepared to meet almost any demand.

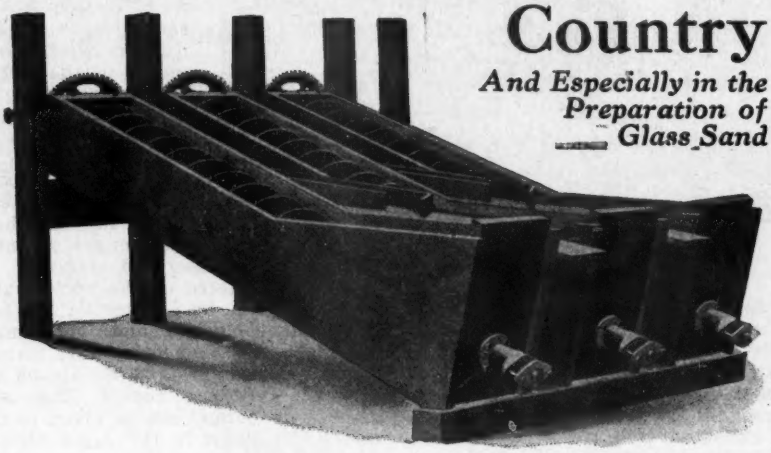
It will be worth while for producers who are planning to put in new equipment at this time to correspond with them.

Industrial Motor for Pits and Quarries

Papers were signed at Ottawa, Ill., by the Commonwealth Silica Sand Company and the Ottawa Steel Molding Sand Company whereby the latter has sold its entire property, consisting of eighty-four acres, and its personal property, to the Commonwealth Silica Company. The consideration is withheld, but it is thought to be about $35,000. The Ottawa Steel Molding Sand Company is owned by Pat Clark, Clifford Powers, M. C. Seiter and William Hawthorne, who are retiring from the sand business.

Used in Some of the Largest Quarries in the Country

And Especially in the Preparation of Glass Sand



LEWISTOWN
Sand Washers

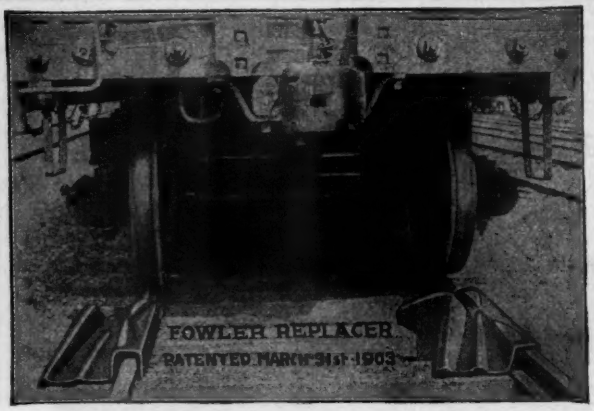
These are reasonably priced, well built, compact outfits, which can be easily and quickly installed. They are simple in construction and efficient in operation. Extensively used in the manufacture of glass sand which is so much needed today in the making of optical lenses for field glasses, telescopes, etc., required by the Government.

If you are not acquainted with Lewistown equipment and service, it will pay you to look into it.

We are in position to assist you solve your problem of whatever nature, if it pertains to crushing, grinding, screening, washing, drying and conveying, as we manufacture a full line of this machinery and equipment. Drop us a line stating what you desire information on.

Lewistown Fdy. & Machine Co.

LEWISTOWN, PENN.



Fowler Replacer.

A device for getting derailed cars back onto the track successfully and rapidly is a necessity around every industrial plant where cars and tracks are used. A private track is not usually as well taken care of or as carefully ballasted as a track maintained by a railroad company, so that accidents are much more likely to happen. When they do happen, the main desire of the manager is to get the cars back on the track as quickly as possible.

A device for doing this is shown in the illustration. It is known as the Fowler replacer, and it is manufactured by the Track Equipment Company, Huntington, W. Va.

These replacers have been used successfully for many years by railroad companies themselves as well as many large industrial concerns. It is constructed of pressed steel, reinforced for strength, and is simply placed over the rail, requiring no spikes to hold it.

Balanced Shaker Screen.

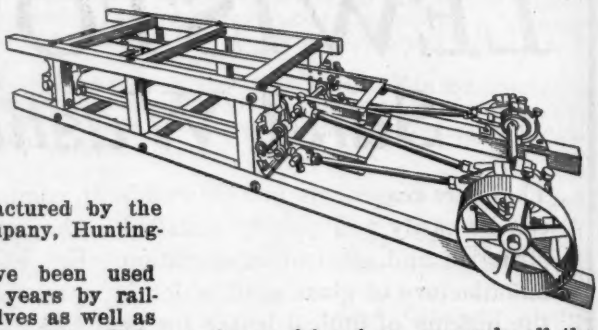
A shaker screen with balanced action is being supplied to sand, gravel and stone producers by Coyle & Roth of Minneapolis.

The principal feature of the machine, which is covered by patent, is the rocker arm on which both the upper and lower screen frames are fastened. A reference to the illustration will show these frames, from which the screens themselves have been removed in order to show the construction more clearly.

By means of the rocker arm the forward motion of one screen is aided by the backward movement of the other, giving something of a rolling motion to the screen frames. The tendency of this action is to do away with the vibration which occurs where screens are mounted separately and operated singly.

Another feature of the rocker arm is this: That by shortening the bottom connecting rod and lengthening out the upper connecting rod, permitting the rocker arms to drop back below the vertical center line, any amount of "jump" can be given to the screens to assist in the rapid separation and cleaning of the screen plates.

Other features are bronze dust and



waterproof bearings on nearly all the revolving parts, and ample adjustments to care for any "settling" of the hopper on which the machine is placed.

F. T. Brown, former traffic manager of the Lehigh Portland Cement Company, has been appointed district sales manager of that company's Spokane office, to be effective at once.

The Lilmay Stone Company of Sharpsburg, Ky., has incorporated with a capital of $19,000, the incorporators being Andrew S. Schmitt, Joseph Muenninghoff and H. J. Muenninghoff.